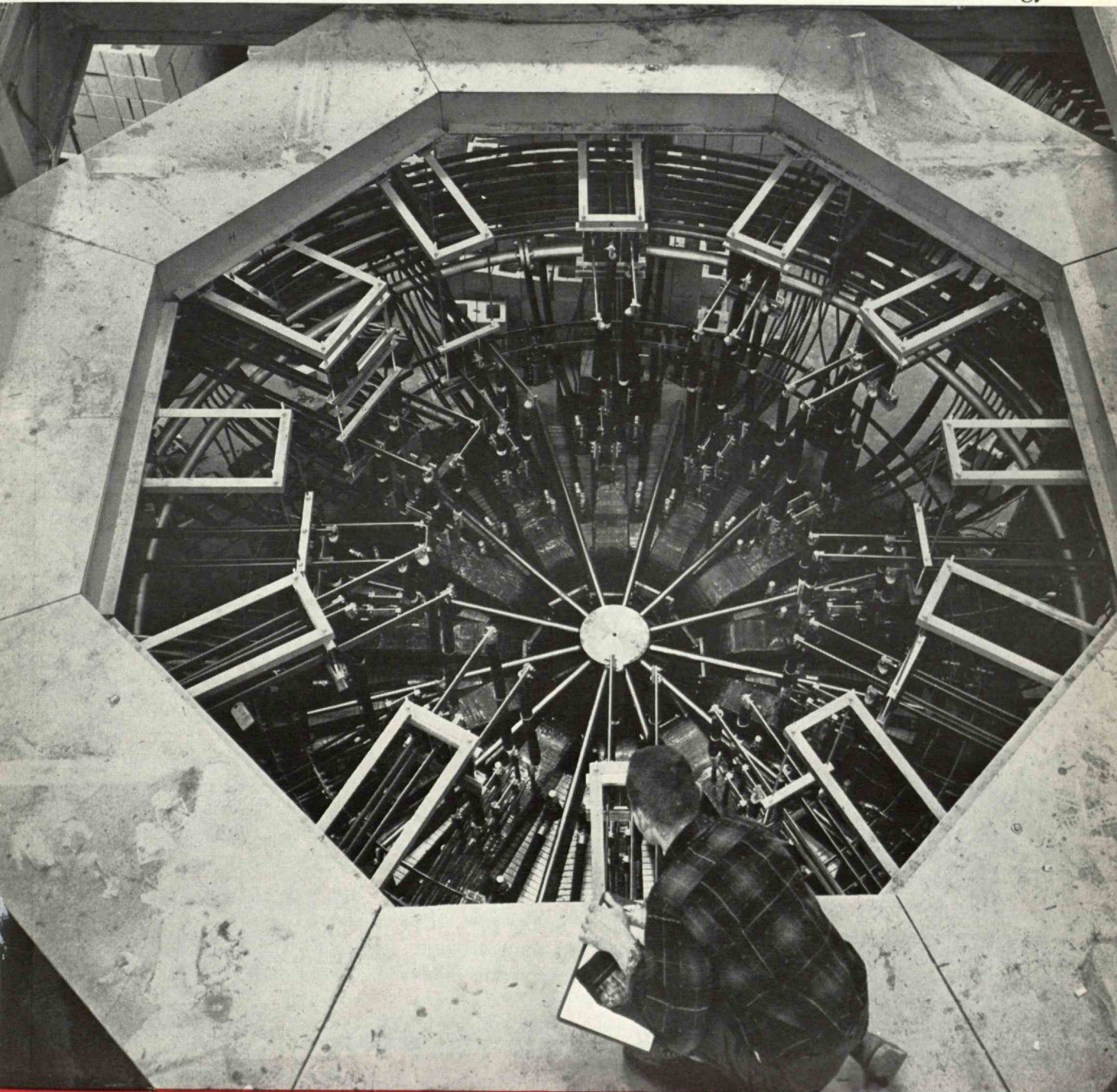


Technology Review

May, 1962

Edited at the Massachusetts
Institute of Technology



The Cambridge Electron
Accelerator — Page 20

The Human Response
Equation — Page 28

technology review

Published by MIT

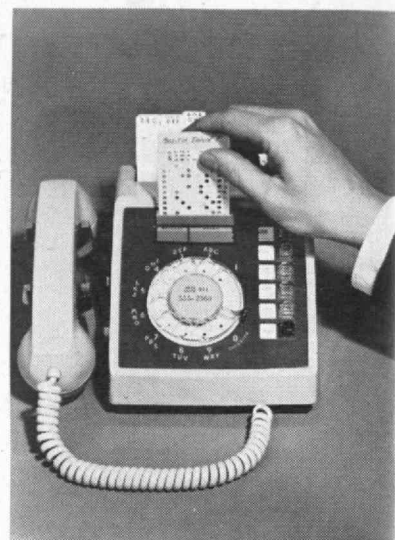
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DIAL IN HANDSET



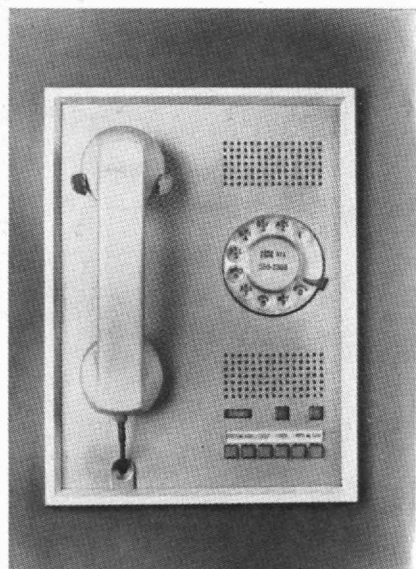
CARD DIALER TELEPHONE



TOUCH TONE PRINCESS TELEPHONE



TELEPHONE SPEAKER



PANEL TELEPHONE

Here are some of the new telephone instruments in various stages of development. Some are still experimental. Others are undergoing further work or being tested in actual use. Exciting in themselves, they are symbols of other exciting things to come . . . to make your communication services even more attractive, useful and convenient.

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This business has lived and grown successful by giving service.

It has done its best to give the public what it wanted, when it wanted it, with efficiency and courtesy. And then invented better things.

In the future, as in the past, the greatest progress will come through the combination of research, man-

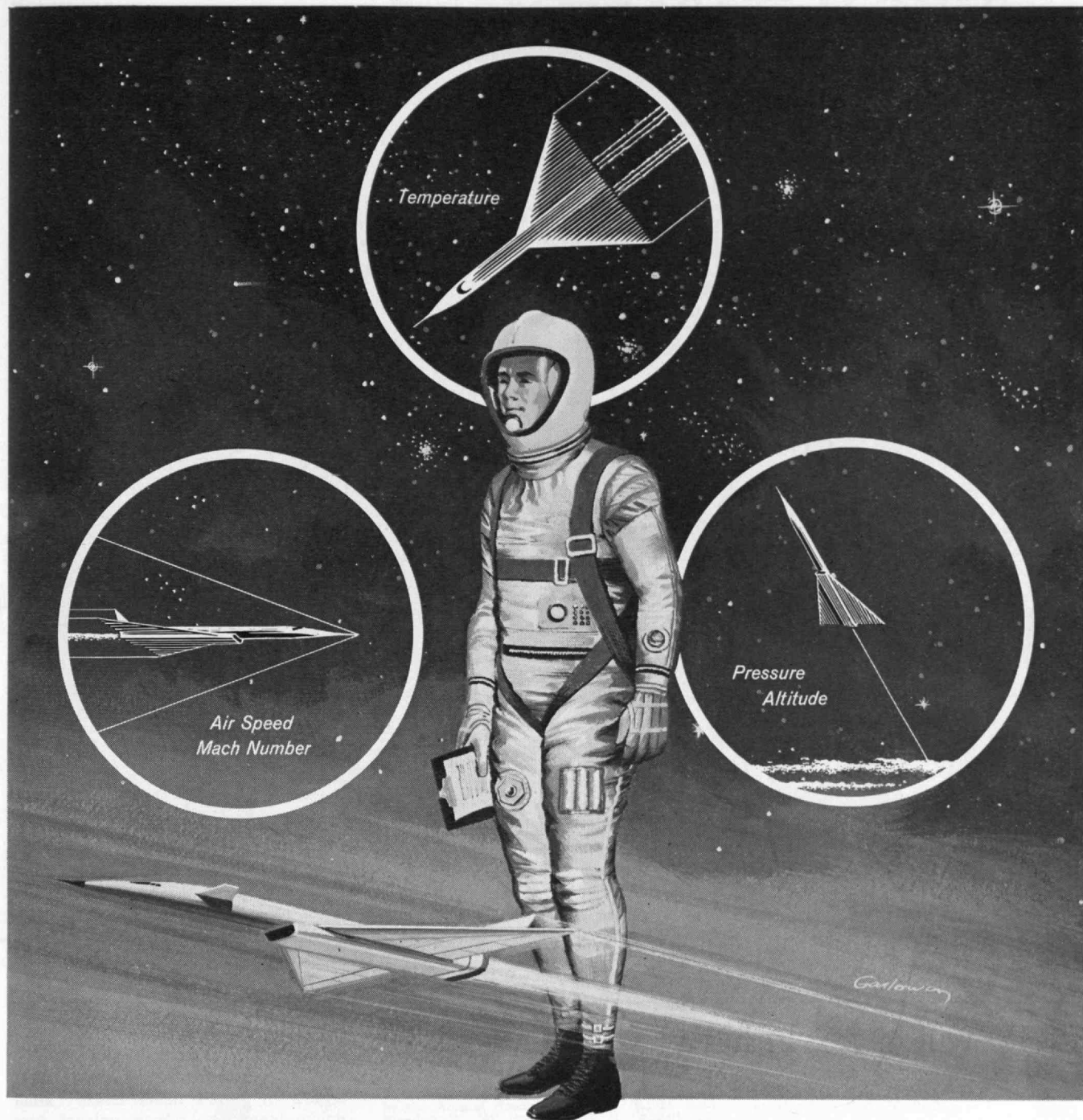
ufacture and operations in one organization, with close teamwork between all three . . . Bell Telephone Laboratories, Western Electric and associated Bell telephone companies.

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Why must he have an air data computer?

A pilot can no longer cope with the extraordinarily high performance characteristics of complex, supersonic aircraft. Too much is happening too fast. Therefore a centralized air data computing system is absolutely essential to aid the pilot.

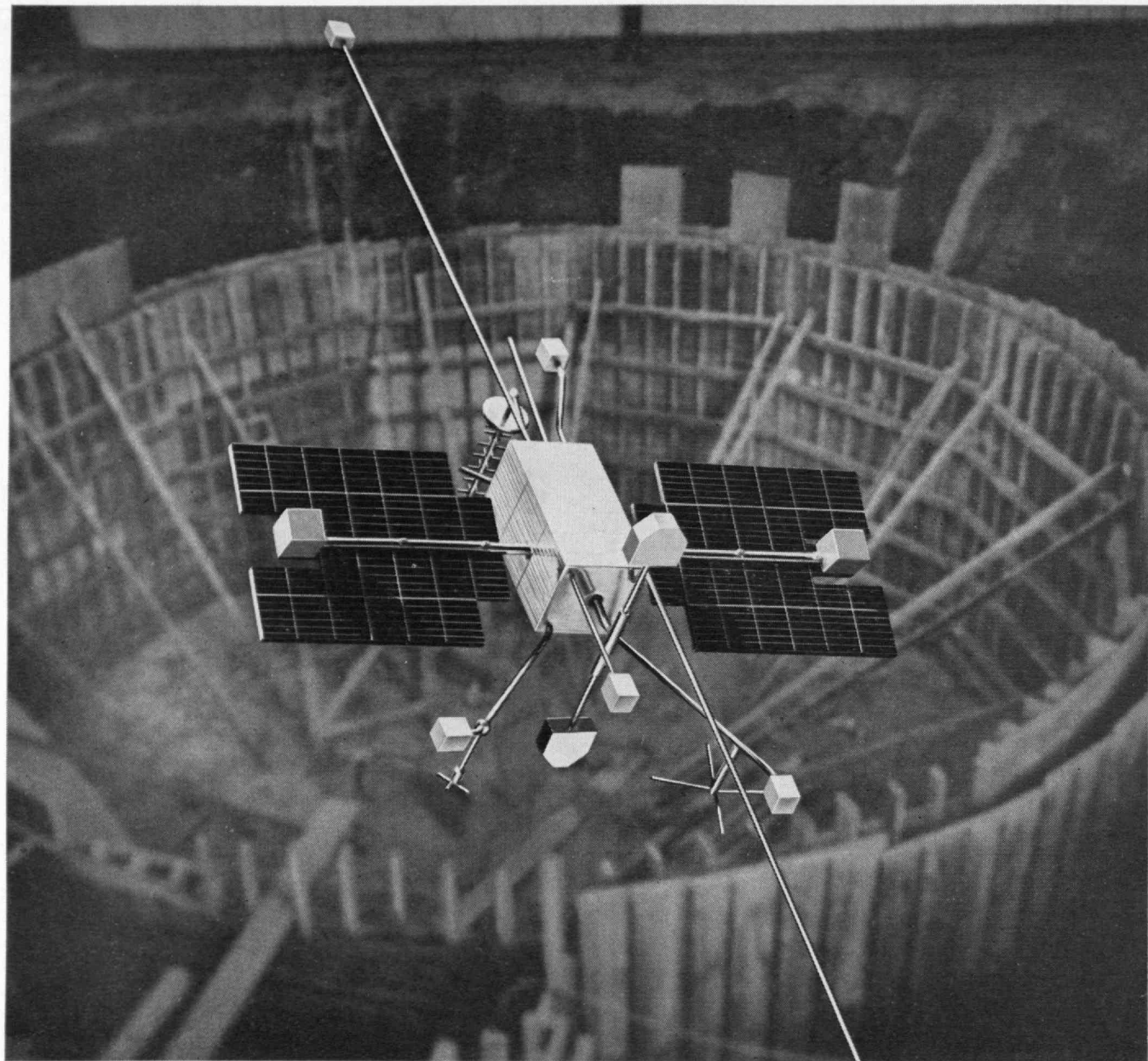
This system measures total temperature, static and total pressure of the air surrounding the aircraft, and computes them into Mach number, true and indicated airspeed, altitude, temperature and other signals for the aircraft's control

systems and cockpit instruments. This enables the pilot to operate the aircraft at maximum efficiency continuously.

A leading designer and producer of centralized air data systems, Garrett-AiResearch has delivered these aircraft systems for the F-4H, A3J, F-104G, CF-104, F-104J, and soon the XB-70 Mach 3 bomber. Vital to the successful operation of our military aircraft, these Garrett air data systems are also ready for tomorrow's jet airliners.



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Soon a new space chamber 30 feet in diameter will fill this deepening bowl of earth. Here OGO (NASA's Orbiting Geophysical Observatory) will be subjected to conditions of solar heating, vacuum, and vehicle radiation to the cold of outer space. The new space chamber will be the sixth at STL. It will enable engineers and scientists working on OGO, Vela Hotel and other STL projects to test large, complete spacecraft as well as major subsystems. And along with other advanced facilities at STL's Space Technology Center, it will provide unusual scope for engineers and scientists to verify

and apply new techniques in design, development and fabrication of spacecraft. STL's expanding space programs have created new opportunities for engineers and scientists in the following fields: Experimental Physics; Applied Mathematics; Space Communications; Antennas and Microwaves; Inertial Guidance; Analog Computers; Propulsion Systems; Space Physics; Digital Computers; Guidance & Navigation; Electro-mechanical Devices; Engineering Mechanics; and Applied Aerodynamics. Applicants should write College Relations at STL's address below. STL is an equal opportunity employer.



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Feedback

Technical Progress in Turkey

FROM EDWIN S. BURDELL, '20:

M.I.T. Alumni will be interested to know that the new Middle East Technical University (METU) in Ankara, Turkey, modeled along American land-grant college lines, is at the stage where co-operation with industry is a reality.

Founded in 1956, the university now has 508 students enrolled in five fields of engineering. The Turkish government supports the university. UNESCO and various foreign governments are assisting in the initial stages by furnishing experts, books, and equipment. The language of instruction is English, and most of the Turkish faculty have been trained in the United States, England, or Germany. The students are predominantly Turkish but an increasing number come from the Near East, imparting an international character to the school.

Under the leadership of Dean Mustafa Parlar, who took his doctor's degree at the Polytechnic Institute of Brooklyn, the Department of Electrical Engineering has developed carrier units for power lines. Much industrial enterprise in Turkey is sponsored by state enterprises. In this case, the "Eti-bank" asked Dean Parlar to design and develop carrier equipment which can be assembled in this country for its rapidly expanding high-tension network.

This equipment provides for very fast communication between the large high-voltage power transformer centers at any time of the day, and will make it possible to remove a defected section from the system by giving signals to automatic equipment. This will both protect the network and prevent the interruption of city power. Information can be transferred between sub-stations in the system which will make it possible to meet the constantly changing needs of large consumption areas immediately and oper-

(Concluded on page 38)



PROFESSOR I. I. RABI, Nobel prize winner and a familiar figure at the Institute for many years, gave six Compton Lectures at M.I.T., brief accounts of which begin on page 17. Bob Lyon took this picture on one of those evenings in Kresge.

EDITOR: Volta Torrey; BUSINESS MANAGER: R. T. Jope, '28; CIRCULATION MANAGER: D. P. Severance, '38; EDITORIAL ASSOCIATES: J. J. Rowlands, Francis E. Wylie, John I. Mattill; EDITORIAL STAFF: Ruth King, Roberta A. Clark; BUSINESS STAFF: Madeline R. McCormick, Patricia Fletcher; PUBLISHER: H. E. Lobdell, '17.

The Technology Review is published monthly from November to July inclusive, on the 27th day of the month preceding the date of issue, by the Alumni Association of M.I.T.; D. Reid Weedon, Jr., '41, President; H. E. Lobdell, '17, Executive Vice-president; Thomas F. Creamer, '40, Carroll L. Wilson, '32, Vice-presidents; Donald P. Severance, '38, Secretary-Treasurer. Copyrighted, 1962, by the Alumni Association of M.I.T.

Office of publication is 10 Ferry Street, Concord, N. H. Editorial and business offices are in Room 1-281, Massachusetts Institute of Technology, Cambridge 39, Mass.

An annual subscription in the U.S. is \$4.00; in Canada and elsewhere, \$4.50; a single copy, 60 cents. Three weeks must be allowed to effect a change of address, for which both the old and the new address should be given.

All correspondence, Editorial and Advertising Matter, Change of Address Notices, Subscription Orders should be addressed to

THE TECHNOLOGY REVIEW
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

POSTMASTER—Undeliverable copies return to The Rumford Press, 10 Ferry Street, Concord, N. H.
Second-class postage paid at Concord, N. H.
PRINTED IN USA

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Individuals Noteworthy

Faculty Appointments

APPOINTMENTS to the M.I.T. Faculty recently approved by the Corporation include those of:

Rene H. Miller, as H. N. Slater Professor of Flight Transportation. Formerly associated with the McDonnell Aircraft Corporation and the Glenn L. Martin Company, he is the author of "Wing Frequencies of Multi-Engine Airplanes" (1940).

Harry C. Gatos, '50, as Professor in the Departments of Metallurgy and of Electrical Engineering. He has been associate head of the solid-state physics division at Lincoln Laboratory.

Gordon J. F. MacDonald, as Professor of Geology and Geophysics. Educated at Harvard, he was a member of the M.I.T. Faculty before going to the University of California.

Michael P. Banton, as Visiting Professor of Economics.

James S. Hekimian and *Gordon M. Kaufman*, as Assistant Professors of Industrial Management.

Robert E. Stickney, as Assistant Professor of Mechanical Engineering.

John H. Wood, '58, as Assistant Professor of Physics.

Ronald T. McLaughlin, as Assistant Professor of Civil Engineering.

Emmon W. Bach and *Paul Schachter*, as Visiting Assistant Professors of Modern Languages.

Students Honored

ONE OF FOUR recently announced recipients of Henry Fellowships for advanced study at either Oxford or Cambridge Universities was *Steven A. Orszag*, '62, a mathematics and physics major at the Institute.

Woodrow Wilson Fellowships for a year of graduate study were awarded this spring to *Victor K. Chung*, '61, *Robert Gilmore*, '62, and *Thomas P. Sheahan*, '62, in physics; *Jeffrey I. Steinfeld*, '62, in chemistry; *Gary M. Stuart*, '62, in economics; *Irving H. Thomae*, '62, in biophysics; and *Leslie H. Tharp*, '62, *Benjamin F. Wells*, 3d, '62, and *Bostwick F. Wyman*, '62, in mathematics.

The Institute of Food Technologists presented scholarship plaques in March to *Steven R. Tannenbaum*, '58, and *Theodore P. Labuza*, '62.

R. R. Lawrence: 1873-1962

A MEMBER of the Institute's Faculty and staff for 45 years, Professor Emeritus Ralph R. Lawrence, '95, died at his home in Belmont, Mass., on March 13. He was born in Boston in 1873 and joined the M.I.T. Department of Physics as an assistant in 1896. Later, he joined the Department of Electrical Engineering, where he became professor of electrical machinery in 1922, and continued to serve until his retirement in 1941.

For many years Professor Lawrence was in charge of the teaching of alternating currents and associated machinery. In 1916 he published a text, *Principles of Alternating-Current Machinery*, which had extensive influence on electrical engineering instruction throughout the United States. This and a second book, *Principles of Alternating Currents*, were printed in several editions.

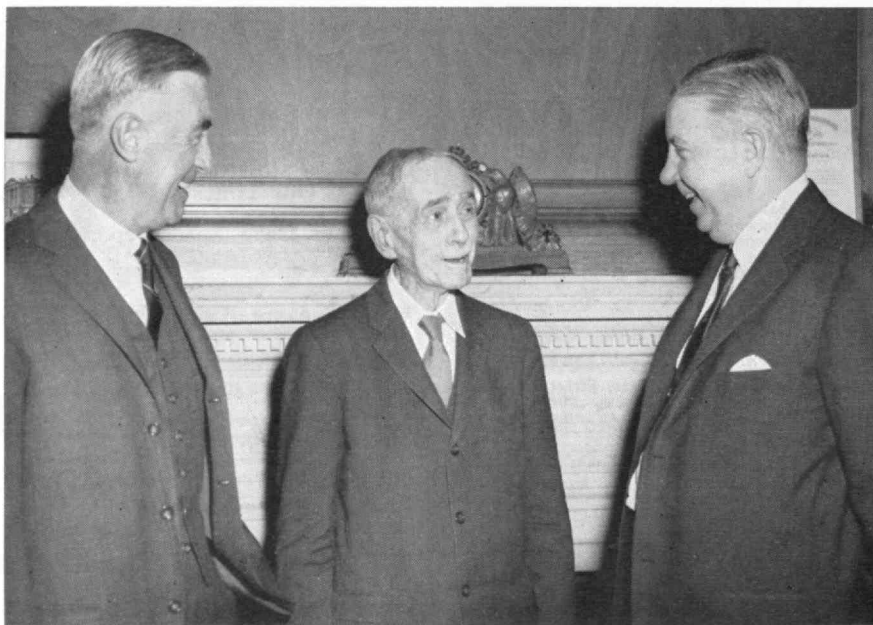
In 1922 Professor Lawrence married Miss Reba Bush, sister of Vannevar Bush, '16, Honorary Chairman of the M.I.T. Corporation. Mrs. Lawrence is his only survivor. Professor Lawrence's brother, William H. Lawrence, '91, served the Institute for 47 years and was professor emeritus of architecture at the time of his death in 1958.

L. M. Dawes: 1882-1962

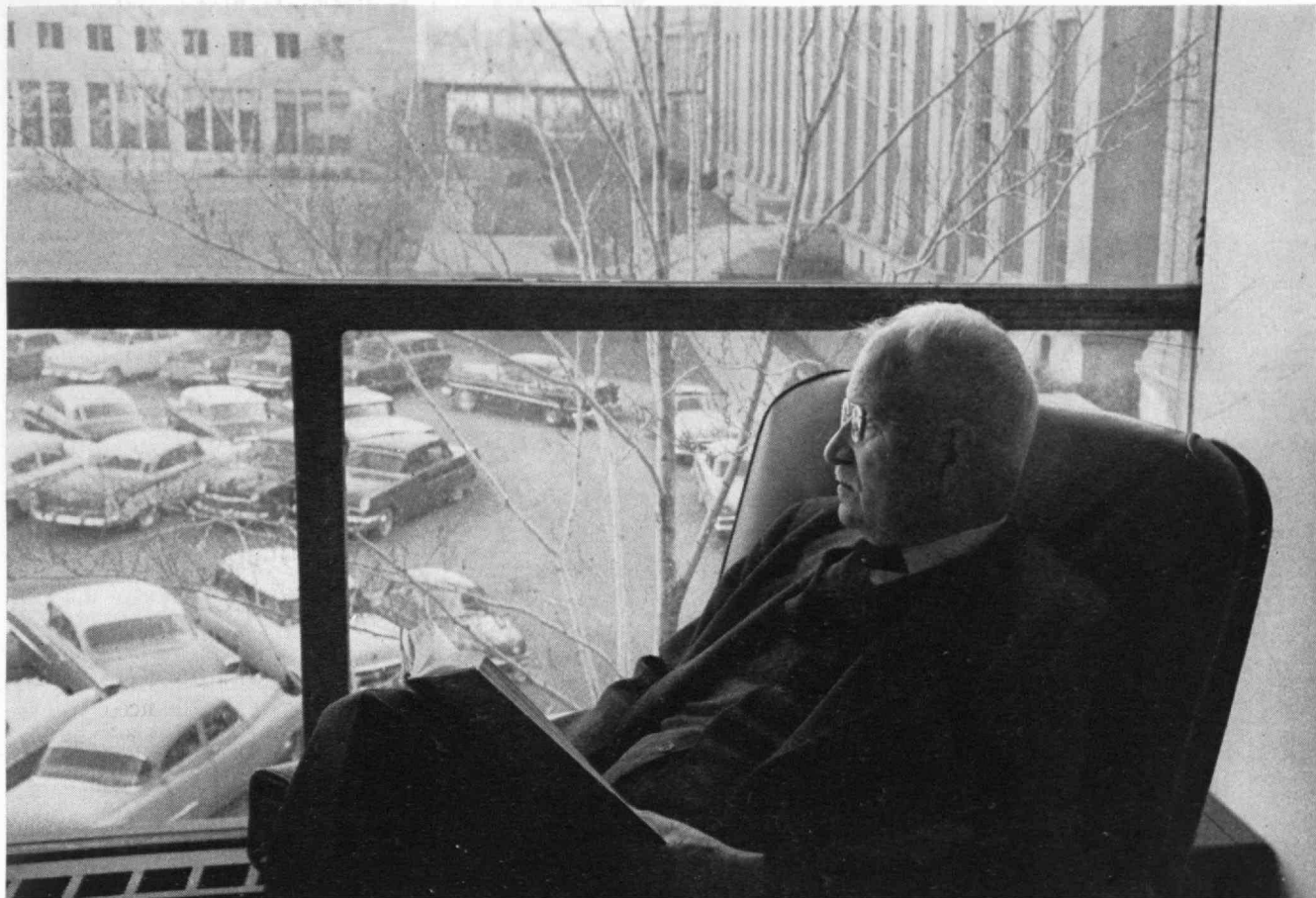
A MEMBER of the Department of Electrical Engineering for many years, Lyman Miner Dawes, '23, Assistant Professor of Industrial Applications, Emeritus, died on March 6. Born in Trenton, N.J., March 19, 1882, he came to M.I.T. in 1920 after 23 years' experience with independent telephone companies, the Pennsylvania Railroad and the Watervliet Arsenal. He became an instructor in 1925, an assistant professor in 1941, and continued to serve part-time for five years after his retirement in 1947.

Professor Dawes lived in Belmont and was past master of the Richard C. Maclaurin Lodge of Masons. He was a member of the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, and the American Society of Engineering Education.

He is survived by his wife, a sister, a son, Donald L. Dawes, '52, and a daughter, Mrs. Lois Ann Lewis, and three grandchildren.



AN HONORED VISITOR to the Institute in March was Ambrose Walker, '91, of Boston. He is the son of M.I.T.'s third President, Francis Amasa Walker. His hosts at luncheon included John J. Wilson, '29 (left), Secretary of the Corporation, and James R. Killian, Jr., '26, Chairman of the Corporation.



Professor Samuel C. Prescott, '94, in the Dorrance Building office which he used regularly up to the time of his death.

Samuel Prescott: 1872-1962

ONE of M.I.T.'s most widely known and highly acclaimed professors, Samuel C. Prescott, '94, died on March 19, less than three weeks before he would have been 90 years old. He was a former dean of the School of Science, head of the Department of Biology and Public Health, the 34th president of the Alumni Association, secretary of his class for many years, and the author of *When M.I.T. was Boston Tech*, a history of the Institute's early years. He joined the staff of M.I.T. the year after his graduation.

Early in his career he joined forces with William Lyman Underwood, '98, a special lecturer at M.I.T., in work which placed canning of food on a scientific basis. Their work dealt with fundamental principles of bacteriology and applications to factory operations, and canners of this country are said to owe more to them than to any other investigators.

Professor Prescott also played a major role in the development of health education as a special subject of instruction, the introduction

of the course in public health engineering, and the initiation of programs in biological engineering and food technology. He established at M.I.T. the nation's first industrial biology course.

He diagnosed and proved preventable a banana disease in Central America, studied the chemistry and preparation of coffee, and later worked on the development of dehydrated and quick-frozen foods.

A leader in founding the Institute of Food Technologists, Professor Prescott was its first president and the guest of honor at its meeting in April, 1961. He also helped to found the Refrigeration Research Foundation and served as chairman of its board of governors. He was a former president of the American Society of Bacteriologists, and a member of many other societies.

He attained the rank of professor in 1914, became head of the Department of Biology and Public Health in 1922, and 10 years later became dean of the School of Science. He retired in 1942 but continued to serve as an honorary lecturer and professor emeritus of industrial biology for 20 years.

He was director of the Boston Bio-Chemical Laboratory from 1904 to 1921, and a staff member of the Sanitary Research Laboratory and Sewage Experimentation Station in 1910-1915. During World War I he was a major in the Sanitary Corps of the U.S. Army, and during World War II after a year of voluntary service to the Quartermaster Corps he was made a special consultant to the Secretary of War. He received the Appert and Babcock-Hart awards from the Institute of Food Technologists.

Professor Prescott was known as a writer as well as scientist and educator, and composed his own Christmas card verses. "At Christmas time we televise our friends on memory's screen," he wrote in 1952, and "send the wish that ere the season ends some special happiness to each may come."

Born on a New Hampshire farm, he resided in recent years at 100 Memorial Drive in Cambridge. He is survived by his daughter, Mrs. Eleanor P. Clemence, and two sons, Robert S. Prescott, '32, and Samuel C. Prescott, '33.

(Continued on page 6)



Increased technical responsibilities in the field of range measurements have required the creation of new positions at the Lincoln Laboratory. We invite inquiries from senior members of the scientific community interested in participating with us in solving problems of the greatest urgency in the defense of the nation.

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Individuals Noteworthy

(Continued from page 5)

New Posts

NAMED in the news recently were the Alumni whose elections, promotions, and appointments follow:

Arthur E. Raymond, '21, as Special Consultant, National Aeronautics and Space Administration . . . Paul J. Cardinal, '24, as Treasurer, National Vitamin Foundation . . . Edgar P. Dunlaevy, '24, as President, Phelps Dodge Copper Products Corporation, and Robert E. Benedict, '44, as Vice-president, The Phelps Dodge Copper Products International Corporation;

Robert J. Fleming, Jr., '31, Maj. Gen. USA, as Governor of the Panama Canal Zone . . . William C. Mentzer, Jr., '31, as Senior Vice-president, Engineering and Maintenance, United Air Lines . . . Manson Benedict, '32, as a Director, National Research Corporation . . . Stuart R. Fleming, '32, as a Director, Ford, Bacon & Davis, Inc.;

Philip S. Cook, '33, as a Technical Superintendent, Baker & Adamson Works, General Chemical Division, Allied Chemical Corporation . . . Roland D. Glenn, '33, as Vice-president, Container Operations, Union Carbide Plastics Company . . . Gerhard Ansel, '34, as Plant Manager, The Dow Metal Products Company, Madison, Ill.;

Robert F. Flood, '35, as Executive Vice-president, Linde Company, Division of Union Carbide Corporation . . . Bernard M. Sturgis, '36, and Barrett B. Russell, 3d, '43, respectively, as Manager, Mid-continent Region, and as Manager of Additives Sales, Du Pont's Petroleum Chemicals Division;

John J. Casey, '40, as Senior Vice-president of Operations and a Director, Seaboard World Airlines, Inc. . . . Charles M. Edwards, '40, as General Manager, Computer Division, The Bendix Corporation . . . Thomas F. Jones, Jr., '40, as President, University of South Carolina;

Howard A. Morrison, Jr., '41, as Director of Marketing, Schaevitz Engineering . . . D. Reid Weedon, Jr., '41, as Senior Vice-president, Arthur D. Little, Inc. . . . Alan K. Jeydel, '48, as Technical Director, the Salt Institute.

(Continued on page 8)



Science helps build a new India

Oxen working the fields . . . the eternal river Ganges . . . jeweled elephants on parade. Today these symbols of ancient India exist side by side with a new sight — modern industry. India has developed bold new plans to build its economy and bring the promise of a bright future to its more than 400,000,000 people. ► But India needs the technical knowledge of the western world. For example, working with Indian engineers and technicians, Union Carbide recently made available its vast scientific resources to help build a major chemicals and plastics plant near Bombay. ► Throughout the free world, Union Carbide has been actively engaged in building plants for the manufacture of chemicals, plastics, carbons, gases, and metals. The people of Union Carbide welcome the opportunity to use their knowledge and skills in partnership with the citizens of so many great countries.

A HAND IN THINGS TO COME

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- **Application of modern alloy theory** to the understanding and development of ferrous and nonferrous alloys.
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More information is given in the current report of INCO activities, "Metal Plus Research." Do you want to review a copy?

Director of Research

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67 Wall Street, New York 5, N. Y.

Individuals Noteworthy

(Continued from page 6)

Faculty Notes

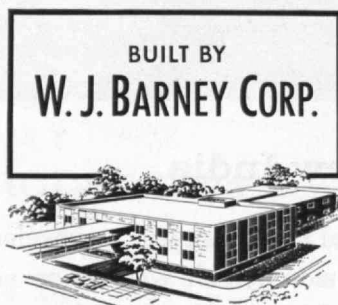
PROVOST CHARLES H. TOWNES of M.I.T. was chosen to receive the John J. Carty Medal at this spring's meeting of the National Academy of Sciences in recognition of his pioneering work in the development of the new amplifiers called masers.

Vernon M. Ingram, M.I.T. Professor of Biochemistry, delivered this year's Jesup lectures at Columbia University. The Jesup lectures were established in 1905 in honor of Morris Ketchum Jesup, New York banker and philanthropist. Dr. Ingram's topic was "A Biochemical View of Genetics and Evolution."

Robert C. Wood, Associate Professor of Political Science, gave a television credit course in "Urban Politics" this year on WGBH-TV.

. . . Joseph D. Everingham, Director of Drama, will stage and direct two plays for the Harvard summer school this year. . . . Gerald B. Tallman, Associate Professor of Marketing, participated in a TV seminar recently on retailing problems. . . . Harold E. Edgerton, '27, Professor of Electrical Measurements, photographed a bullet in flight on a recent "I've Got a Secret" TV program.

(Concluded on page 36)



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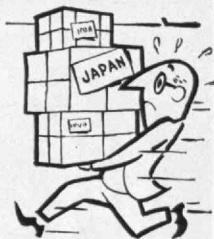
"Operations research"—the term itself—has attained full status in the recently published Webster's Third International Dictionary. OEG takes particular



pleasure in this recognition because of our background as the oldest military operations research organization in the country.

Now when someone asks, "But what do you do?" we can refer him to Webster's.

OEG advises the Chief of Naval Operations and certain Fleet and Force commanders regarding operational problems susceptible to quantitative analysis. A recent example is collected under the title, "The Selection of Cargo for Air Transport." Here the objective was to determine criteria for shipping the myriad replacement parts stocked by the Navy's Yokosuka (Japan) Supply Depot. One interesting discovery: Less than 1% of the line items account for well over half the dollar value of annual issues at Yokosuka.



The more sobering content of another recent study can be deduced from its title, "The Effects of Radiation on Populations," a two-part work considering (1) the effects on individuals exposed to radiation today and (2) the genetic consequences for future generations. One of many conclusions: The continued detonation of nuclear weapons in the stratosphere, at a 100-megaton-yearly rate, would result in reducing individual life expectancy by approximately 20 days.

Assisting in the creation of a stable U. S. deterrent posture is one of the major aims of OEG's research program. Permanent career positions are available to scientists and mathematicians with advanced degrees who are interested in problem-solving and want to contribute substantively to the national purpose. These positions are in Washington, D. C. Please send your inquiry to the Director, Dr. Jacinto Steinhardt.

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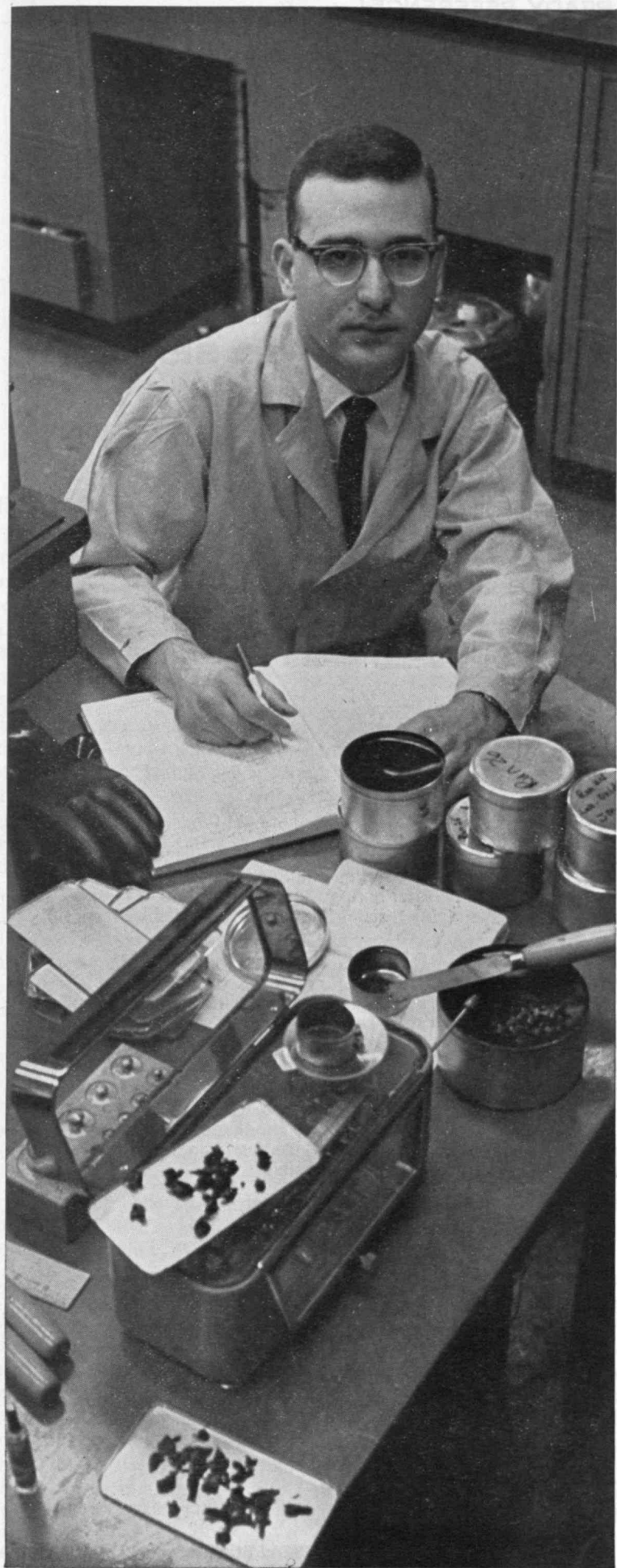
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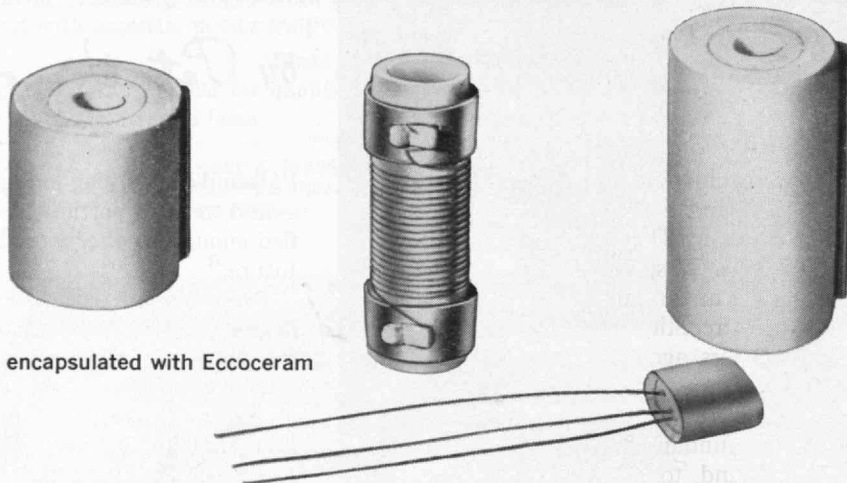


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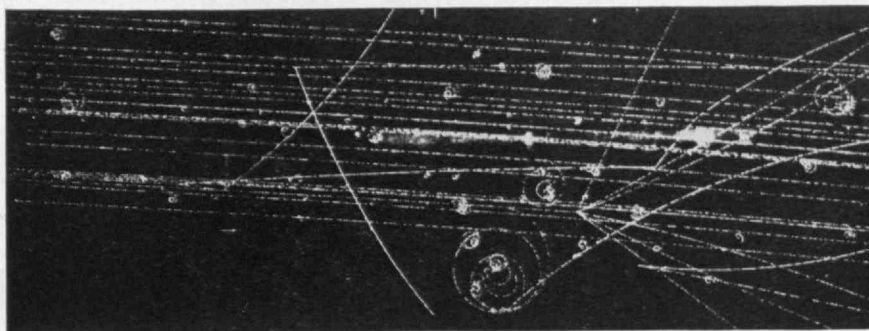


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Trend Of Affairs



Human Sensory Operations

"NO DOUBT we can build a machine to scan colors, and behave accordingly. Can we make one to *see* blue as I see it?" a scientist wonders in Theodore Morrison's novel, *The Whole Creation*. Despite more than a century of scientific research, much remains to be learned about our sensory and perception processes.

Radar problems led, a few years ago, to the development of a general statistical theory of signal detection. This theory is now being used at M.I.T. and elsewhere to study some of the fundamental problems of psychology. It has been found to be helpful in studies of how people discriminate and recognize different intensities, sizes, locations, hues, pitches, and patterns—or more generally, how they detect and identify a signal. Since neural information is always perturbed by random interference or "noise"—irrelevant but signal-like events in the environment or in the nervous system itself—the detection of even the simplest signal is a complex, statistical decision problem. It is an interesting discovery, but a fact which has hampered attempts to measure human sensitivity, that this decision depends heavily upon the observer's advance knowledge of probabilities and upon his motivation. The techniques developed in electrical communication research make it possible to determine and isolate the decision criteria used by a human observer, and to compare his actual sensitivity for various signals with that of an "ideal" observer.

It was long believed that there were inherent sensory thresholds above which people detected signals and below which they did not. Recent experiments have suggested that if such "wired-in" decision devices exist, they play a very small role. The question of whether or not a signal is "seen" or "heard" seems to rest upon a process that is, to a large extent, under intelligent control. Although the psychologists cannot yet explain how people see given colors or hear given sounds in ways adequate for the requirements of the builders of machines, their new approach does seem likely to clarify several of the basic problems. At M.I.T. from July 30 to August 3 this year, Associate Professor John A. Swets will offer a special program dealing with the theory of signal detection by human observers.

THE PHOTOGRAPH above disclosed the anti-cascade-hyperon, or anti-Xi-minus particle, the newest one observed, measured, and photographed. It lives only one ten-billionth of a second, and was reported simultaneously by teams of physicists using the big synchrotrons of the Brookhaven National Laboratory and CERN, the European nuclear research center. Professor Victor F. Weisskopf of M.I.T. is now CERN's Director General.

Nuclear Reactor Safety

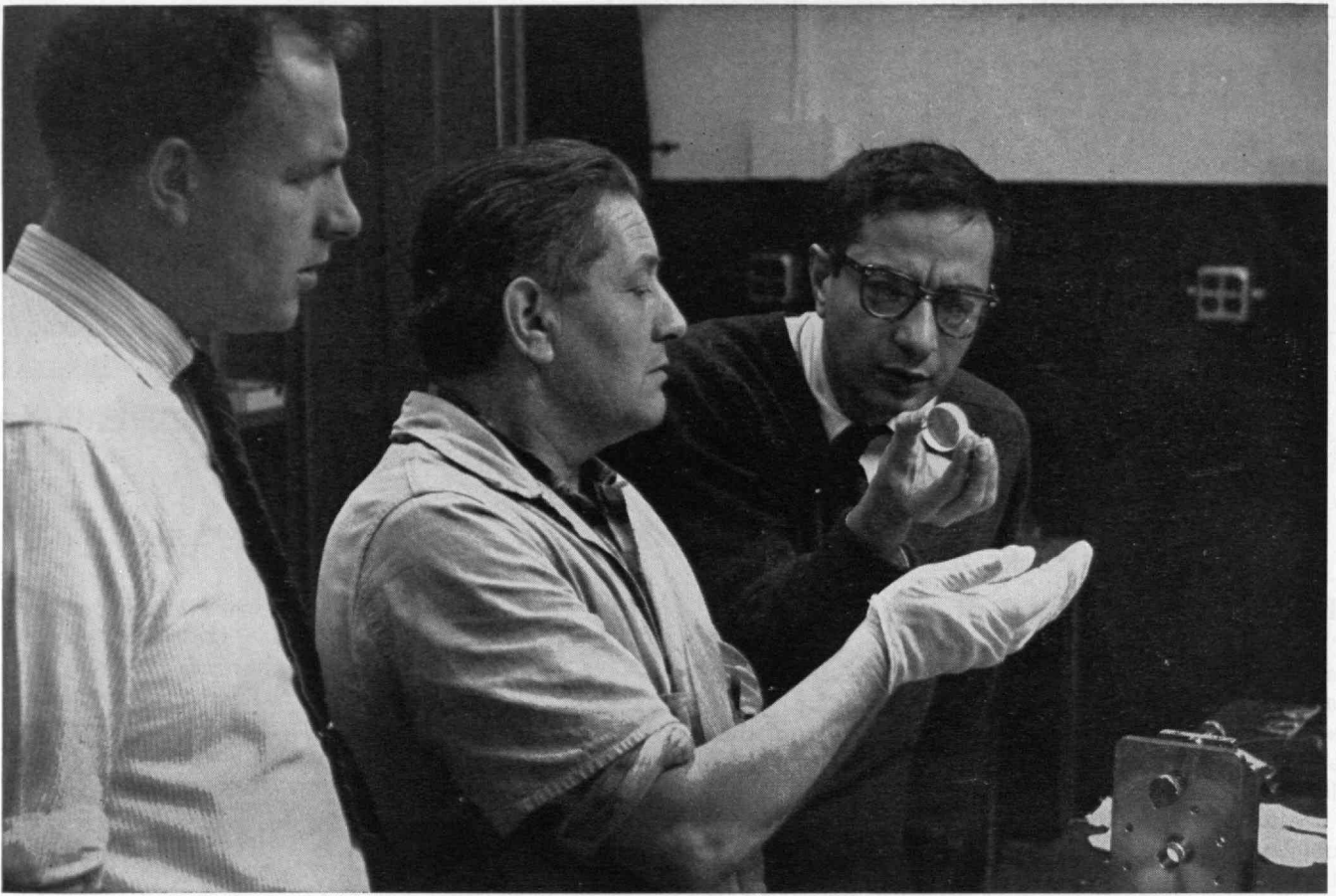
THE Atomic Energy Commission has awarded a \$300,000 contract to M.I.T. for the preparation of a comprehensive manuscript on nuclear reactor safety. Professor Theos J. Thompson, Director of the M.I.T. Reactor, will head the writing project and about 20 experts from universities, industry, and AEC contractor organizations will participate. The manuscript is to be ready for publication in December, 1963.

It will deal with technical factors bearing on safety in the design, construction, and operation of reactors. Subjects to be covered include reactor containment, fission product release, retention and disposal; reactor fuels, materials, and metallurgy; reactor core design and steady-state power behavior; reactor kinetics; heat transfer and fluid flow; mechanical systems; instrumentation and controls; chemical reactions and criticality.

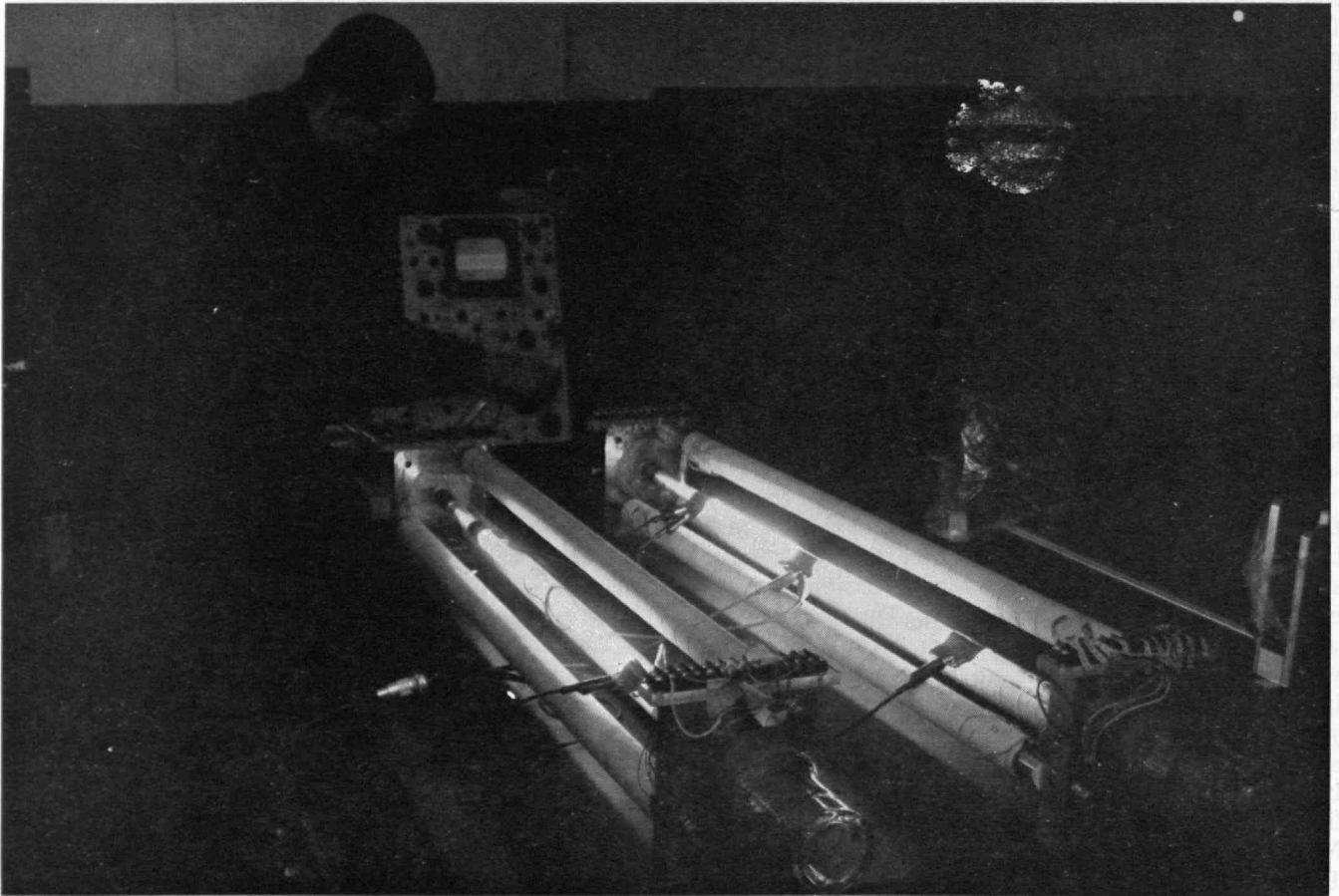
The Traveling Sloans

PREPARATORY to visiting Europe May 17 to June 4, the Alfred P. Sloan Fellows and six Sloan teaching interns went to Washington in March for a week of conferences with U.S. officials and the ambassadors of Britain, France, Italy, and Germany.

Supreme Court Justice William O. Douglas dined with them, and among those on their "faculty" for the week were Secretary of Commerce Luther Hodges; Secretary of the Interior Stewart L. Udall; Postmaster General J. Edward Day; Budget Director David E. Bell; Chairman Walter W. Heller of the Council of Economic Advisers; Chairman John W. Macy, Jr., of the Civil Service Commission; Administrator James E. Webb of the National Aeronautics and Space Administration; and Chairman Paul R. Dixon of the Federal Trade Commission.



Maser workers include (from left) Eugene T. Leonard, technical aid; Walter Riemann, machinist, and Dr. Ali Javan.



These gaseous optical masers operate independently, but are set up so their outputs can be mixed and compared.

Optical Maser Research

TWO OPTICAL MASERS were set up side by side at M.I.T. this term to study what their operators call a super-duper-heterodyne system. The first masers, developed by Provost Charles H. Townes and others a few years ago, amplified microwaves by stimulating emission of radiation from material particles. Such masers already have proven extremely helpful in radio and radar apparatus. Light waves now are being amplified similarly, and these optical masers at the Institute are to be used to seek more knowledge of atomic systems and the interactions between electromagnetic radiation and atoms.

Both of these masers are long tubes containing gaseous helium and neon. They glow like the tubes of a neon sign when they are operating. The light in which the experimenters are interested, however, comes out the ends. It has the highest color purity that ever has been obtained in optical frequencies and does not spread out like ordinary light. These masers emit such collimated light continuously.

This light can be used in experiments suggested by relativity theory and opens the way to a new and more precise standard of length. To facilitate the study of it, the masers have been mounted on a three-ton granite slab, supported by inflated airplane tires, in the basement laboratory used for many years for delicate spectroscopic work.

Optical masers have given researchers far better control over light than was previously attainable. Many researchers now are studying the possibilities of using their intense, collimated beams as carriers of communications and as sources of heat in medical and industrial operations. In this laboratory, however, the emphasis will be on studies of the fundamental nature of waves and matter.

Working with Dr. Townes is Associate Professor Ali Javan, who proposed and invented the Bell Telephone Laboratories' optical gas maser before coming to M.I.T. last fall. Dr. Javan received his doctorate at Columbia University and formerly worked with Dr. Townes there. He was born in Teheran 35 years ago and wrote poetry in Persian before becoming a physicist.

Spring Festivities

A SOCIAL WEEKEND called *Divertissement* will climax a series of spring festivities at M.I.T. this year on May 4, 5 and 6. Inspired by the response to a fraternity-dormitory co-operative effort during the Institute's Centennial, this weekend's program will include a float parade on Briggs Field, athletic and musical events, and much dancing. Erich P. Ippen, '62, and Neil K. Weatherbie, '62, are co-chairmen of the student committee in charge.

Parents' Weekend, April 27, 28 and 29, featured a program planned by a committee headed by Michael L. Jablow, '62, and Bardwell C. Salmon, '62. Their plans called for demonstration lectures by Professors Harold E. Edgerton, '27, and Hans Mueller, crew competition, and entertainment by Dramashop and the finalists in the All-Tech Sing.

International Week, earlier in April, included an international fiesta, a performance by the Ceylon National Dancers, foreign films, and discussion of world affairs. Vijaykumar Shah, '62, was chairman.

Aviation's History Personalized

RUBBER BANDS probably have flown more aircraft than any other power source, and a rubber-driven helicopter aroused the Wrights' interest in aviation, Professor Emeritus C. Fayette Taylor observed in the History of Aeronautics Lecture at M.I.T. this spring in memory of Lester D. Gardner, '98.

Professor Taylor dealt neither with Daedalus nor supersonic jets, but reviewed the many critical problems that he and others present encountered in making "engines light enough, with power enough, to fly without destroying themselves." He recalled both the newspapers' and his own father's disbelief when the Wrights flew; and he recommended the Wrights' own account of modern aviation's birth (in the September, 1908, issue of *Century Magazine*) to today's students as a model of reportorial writing.

He described an 1842 helicopter with steam jets at its rotor tips, the build-it-and-try-it days when aeronauts wore derbies, and the thrills and hazards of flying when castor oil was considered as essential to running an engine as to bringing up children.

When he came to the Pratt & Whitney engines, he introduced Ed Godfrey and Earle Ryder, and at other appropriate points in his narrative he presented similarly Frank W. Caldwell, '12, "the father of the American propeller," and Professor Edward S. Taylor, '24, who was responsible for the use of dynamic vibration absorbers in engines. Also present was Leonard S. Hobbs, United Aircraft Corporation director and a member of the Visiting Committee of the Department of Aeronautics and Astronautics. Professor C. Stark Draper, '26, presided, and Professor Emeritus Shatswell Ober, '16, was at hand to greet both the veterans and the newcomers.

Corporate Support of M.I.T.

THE M.I.T. Second Century Fund received a \$300,000 contribution this spring from the American Telephone and Telegraph Company. This brought to 179 the number of corporations assisting the fund and contributions from such sources now total more than \$15,000,000.00.

Frederick R. Kappel, chairman of the American Telephone and Telegraph Company, notified M.I.T. of the gift and said that his company places no restrictions on its use.

"We are deeply grateful to AT&T for its very generous support of our program," said John J. Wilson, '29, the fund's chairman. "An unrestricted gift is particularly helpful because it gives the Institute the opportunity to assign funds where they are most urgently needed."

"Our program expresses the need for a closer partnership between industry and education to meet new national needs. As education in science, engineering, and management becomes even more essential to our industrial growth, it is increasingly appropriate that corporations support private institutions concerned with the furtherance of industry's technological and managerial needs."

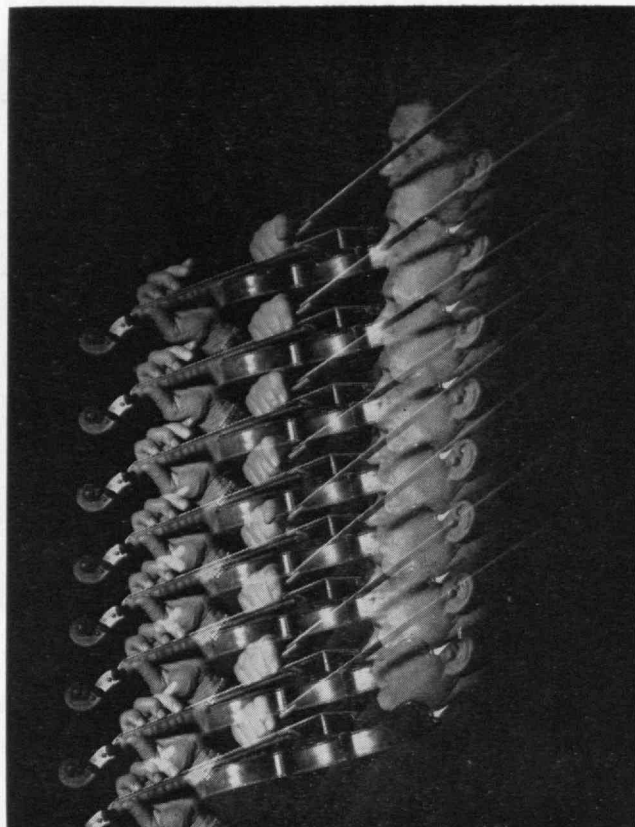
"Industry's response to the needs of M.I.T.'s Second Century Fund has been deeply gratifying. It has been the result of an altogether new concept of corporate support for education which recognizes the national responsibilities of national corporations."

Photos to Help Music Students

Edgerton's methods are applied to preparation of new textbook

IN ADDITION to oceanographic and other projects, Professor Harold E. Edgerton, '27, is now helping a University of Nebraska professor of strings, Louis C. Trzcinski, use multiple-exposure, high-speed photographs to show students just what happens when an instrument is played correctly. Photographs such as those on this page will be used in a textbook that he is preparing.

Even when basic arm, wrist, and finger movements of different violinists are almost identical, his research has indicated, the musical sound or expression may be quite individual. Photographs are expected to help students master basic stroke patterns, nevertheless, and plans are being discussed for a "teaching machine" which would present sounds and pictures of strokes simultaneously.



Science, Education, and Society

The 1962 Compton lectures by Professor Rabi raise questions about the responsibilities of specialists and how to prepare men for them

MUST scientists run for public office? Should they remain on tap but not on top? Are we preparing students adequately for great responsibilities? Can the diverse elements of our culture be brought together? How can further advances in science be assured?

Such questions, variously stated, were discussed by the Institute's Faculty and distinguished visitors in March at formal seminars. They were debated, too, in dormitory rooms, Cambridge parlors, and car pools.

Professor I. I. Rabi of Columbia University raised them in this spring's six Karl Taylor Compton lectures in the Kresge Auditorium. He reviewed their origins, stressed the spirit and culture of science, offered suggestions for the improvement of education, and at times—in view of the difficulties he noted—seemed surprisingly cheerful about mankind's prospects.

The Adolescence of American Science

PROFESSOR RABI began by describing how America built up "a critical mass" of scientists able to perpetuate itself and grow in importance. Science, he recalled, was for many years a pleasure for which one made sacrifices; now it can also be a lucrative career offering a man opportunities in many fields.

Much of this change occurred during the lives of Karl Taylor Compton (1887-1954) and Percy Williams Bridgman (1882-1961). Both scientists and jobs for scientists were scarce in the 1880's. A leading physicist, Henry Augustus Rowland, told the American Association for the Advancement of Science then: "Fain would I recount to you the progress made by my countrymen . . . but I go out to gather the ripe grain and find only tares. Here and there a noble head of grain rises above the weeds, but so few are they that I find a majority of my countrymen know them not."

Nevertheless, Professor Rabi said, "a kind of time bomb was ticking away." American universities were training large numbers of students, scientific societies were appearing, and industry was becoming interested in research. Many young men, including the lecturer, soon were continuing their studies in Europe.

"What did I get out of this European experience?" he asked. "It is a very subtle thing. . . . I found that although I knew the libretto, I did not have the music quite right. . . . Important scientific knowledge is not just encyclopedic knowledge. It has got to have a kind of meaning. . . . It is just as difficult, sometimes more difficult, to do an experiment which has very little significance as to do an experiment which has the greatest significance. That requires a training of the judgement, the acquisition of a certain culture, a tradition, a feel-

ing, and an understanding which our generation of American students did not have."

Those young physicists who studied in Europe returned with "the white man's magic" of quantum theory and "made a tremendous impression on the natives over here." The quality and tone of the papers in *The Physical Review* changed, and "when the war came American science was a very vigorous and massive movement."

Its further growth was aided by the influx of scientists during Hitler's reign. Men such as Professors Rossi and Weisskopf at M.I.T., and Fermi at Chicago, made contributions which it is hard to exaggerate, but the real job of educating the prewar generations, Professor Rabi concluded, was done by Americans.

The Wild Horse We Must Tame

IN HIS second lecture, Professor Rabi recalled how "that happy triumvirate, Conant, Compton, and Bush," organized the National Defense Research Committee and found ways for scientists to work efficiently on military problems. He described the Radiation Laboratory in M.I.T.'s backyard where men with no experience with microwaves worked on microwave radar. As a recruiter for it, Professor Rabi was turned down only once (by a Nobel prize winner who was so modest he genuinely thought he could not help).

The rush back to peacetime work from this and other huge wartime laboratories reminded him of the Greek city states in which a man might be a general in one campaign and a foot soldier in another. But the problems of government would not "stay down," and scientists soon were working again in places like Lincoln Laboratory and the Rand Corporation.

President Eisenhower's appointment of Dr. Killian as his science adviser provided a focal point for the scientific community. Both in Washington and abroad, scientists now hold important posts and "Cambridge is still the hub of the universe." In CERN scientists have shown that countries can "work together, spend money together, and have a project which they run in common." Professor Rabi spoke approvingly of the suggestion that this country have a Secretary of Science, but emphasized a more basic question:

"How can the spirit and culture of science permeate the public, so that science remains an adventure of the human spirit? . . . A rational and efficient administration does not necessarily result in wise, sound public policy. To have democracy, one must first have democrats. To live properly with science, one must have a public which in a deep sense is committed to science and its values. Science used only as an instrument of power

only causes the stakes to be raised in the contest of power."

The universities especially, he said, should take to heart President Eisenhower's warning against letting public policy become "the captive of a scientific technological elite." In addition to information the universities should provide wisdom and guidance. If a university builds fallout shelters, he said, it should not do so merely in acquiescence to the despair of our times; "it has the further responsibility to study and to guide so that the fallout shelters become only a memory . . .

"We are riding a wild horse and we must learn to tame it because we have no choice but to ride. . . . The modern nation state standing on its sovereign powers, marshalling its citizenry through every device of propaganda to aggrandize its power and influence, must submit to the universality of science. . . . This holds for France as well as the Congo, and for the United States as well as for Russia. In this field the most advanced country in the world must take the leadership. This is the chief problem [in] science and national policy."

What Americans Need Now

AS A STUDENT, teacher, and man-about-town generally, Professor Rabi offered four suggestions regarding education in his third lecture.

At M.I.T. and many other colleges, students are selected so rigorously now, he noted, that their social and financial success is likely to be assured. Yet a bright juvenile delinquent may acquire a better understanding of the law than they do; too many are graduated knowing no more about our legal framework than the traffic laws. Requiring them to study law would sharpen their wits, stimulate exact reading, and give them a better hold on everyday life. "It might be especially commended," he remarked, "to the women's colleges to bring home the idea of logical and connected reasoning in normal situations."

The social anthropology of the United States, he continued, should also be taught. Religious, racial, regional, and other differences should be understood more broadly; Texas, for example, could be more than a subject for conversation, admiration, and exasperation. What do Mr. Kennedy and Mr. Nixon have that scientists too often lack? They understand the local needs and micromores of the country, Professor Rabi observed. Yet scientists as well as lawyers should be able to run for office and serve as mayors, governors, legislators, or even President.

Thirdly, he called for greater emphasis on self-expression in both writing and speech. "The style in which Ph.D. dissertations are written," he said, "is often so deplorable that they could be passed off as a parody or as a practical joke. The participles dangle and jangle. The paragraphs have little unity or coherence." There are thousands of professionals who, with encouragement, could prescribe remedies for this and also make "listening to speeches more of a pleasure and less of an exercise in patience."

Finally, Professor Rabi recommended formal instruction in judgement. It would include the "quantification of judgement" by the use of probability and statistics to increase the accuracy of estimates. This is "the mathematics of everyday life," and it could be taught

as part of "an exposure to logic" by the case method.

Great questions such as arms reduction call for appraisals of possible enemies' intentions, political and economic reverberations, and many other possibilities. Too many young people tend to shy away from accepting responsibility for deciding such questions because their education did not prepare them properly.

"In some ways," Professor Rabi concluded, "this has become a topsy-turvy world, where the people who know work for the people who don't. . . . We must learn to put our house in order. We must learn somehow to make our culture a unity. . . . An example of order at home is worth much more than any amount of moralizing."

The Education of Western Man

COMPARE the situation now, 17 years after World War II, with that 17 years after World War I, Professor Rabi suggested in his fourth lecture, and you will see many reasons for optimism. There have been great advances. But the greatest progress has been in warfare, because now "the enemy can be completely destroyed while you yourself are suffering the same fate."

All countries are seeking to become Western, but none lives in harmony yet with both the scientific, technological elements of its culture and the more traditional elements. We have ruling groups which are not antagonistic to technology, but fail to grasp its opportunities and dangers.

As evidence of the "lack of communication" between the diverse elements of our culture, Professor Rabi pointed to the great glass buildings rising at the same time that the government is recommending shelters. But there are signs, too, that "a common language" may be evolving. These include the rising interest in the history of science, the work of Professor Zacharias' group, and the movement of scientists into spheres of activity formerly considered remote from their culture.

"What goals," he asked, "can we give people so that they can work together? . . . There is no problem in producing things. Our problem is to give people work which is significant and in this respect we should not forget the scientific industries. There is no reason that I can see for not introducing scientific and technological objectives."

The underdeveloped countries pose another set of problems. Helping them is a subtle task that contains enormous technological elements.

All of the apparatus at our disposal, moral, technical, and social, will be required to meet both the needs of the world's poorer people and "the dire questions of our own survival." Our sense of self-preservation sometimes appears to have atrophied, but it may be that after reasonable discussion with others the road ahead will seem simple and clear. "I close with the hope," said Professor Rabi, "that by getting together with the people who comprise the different strands which compose our culture this main problem as well as other problems will fall into place."

A Science in Permanent Revolution

IN THE fifth lecture of the Compton series, Professor Rabi turned back from the problems of nations to those confronting science. Physics, he emphasized, is a science

(Concluded on page 48)

Why New Nations Seem So Strange

An M.I.T. professor's book clarifies Burma's political strife

BY NELSON LEES, '53

THE MILITARY TAKE-OVER in Burma this spring made Lucian Pye's new book, *Politics, Personality, and Nation Building*, particularly timely.* Its author is professor of political science, on the staff of M.I.T.'s Center for International Studies, and a specialist in Asian politics. In this book he studies the general problem of nation building, using Burma as an example.

The basic question he considers is: Why are transitional societies having such great problems in creating an effective modern state system? He finds that psychological problems are more basic than economic ones, and reports that the most basic of all is each new country's search for identity.

The book's first section is a sociological and political analysis of nation building. Pye finds that the characteristics of transitional politics are very different from those of stable societies. These characteristics include overlapping boundaries between political, social, and personal relations, disagreement on the means and ends of political action, and very powerful emotional and spiritual reactions to popular leaders. In addition, he writes that a political party is often looked at as a total way of life; hence opposition to it tends to appear revolutionary. Transitional societies, he says, "desperately need a respectable and widely accepted explanation of their current backwardness and convincing reassurances that progress and dignity are possible for them."

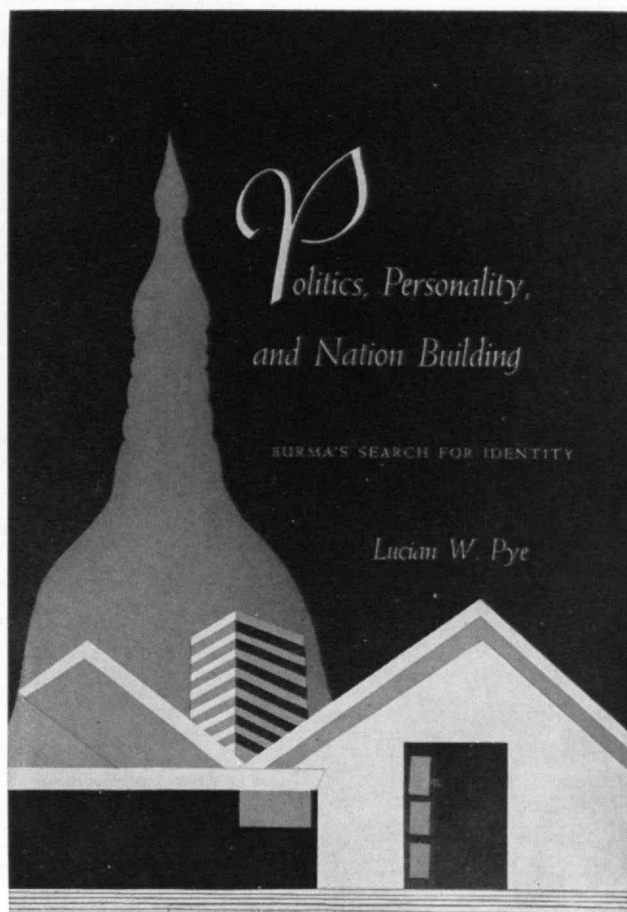
Pye finds that basic to all political action is the process of socialization by which a child realizes his identity in his own society, then becomes aware of a political world, and finally—if he chooses—becomes politically active. These processes are coherent in stable societies, but not in transitional ones. There the child is not trained for the kind of world he will actually join.

Carry-overs from Colonialism

The political world, moreover, is confused—and made insecure—by lingering effects of colonialism on the one hand and the impact of an emotional but disorganized nationalism on the other. Effective collective action and healthy competition become almost impossible. Rapid change generates uncertainty, and this in turn generates a deep distrust of human relationships.

Pye shows that in Burma colonialism—by its structure—largely carried forward already established concepts of a sharp division between officialdom and the

* Yale University Press, \$7.50.



common life. Under colonialism as in classical times the government was the center of life and officials were the elite of society. Pye finds that the attitudes and practices that now govern political behavior are largely carry-overs from the broken-down traditional order and the recent colonialism.

A Gap Between Leaders

Both modern administrators and popular politicians are needed in the new structures of authority which must be created. However, he notes, these two groups clash. The administrator, reared in a colonial tradition and strongly influenced by the West, feels competent to operate a government and sees politicians as superfluous. The politician is a newer figure, untrained by colonialism, and confused in a world which is essentially very strange to him.

Pye finds Burmese politics hampered by poor communications, a widening gap between public discourse and private feelings, and a rigid separation of public and private images of political events. "The Communists," he writes, "have persistently followed the practice of saying in public what other Burmese would say only in confidence, and hence are considered bores beyond the pale of respectability." The Americans, on the other hand, are sometimes thought rather artless for using public images in private conversations.

Political action, according to Pye, is tightly linked to the Burmese concepts of interpersonal relations which are based on a deep-seated fear of provoking others. "Fear of provocation explains a fundamental passivity toward danger in the manifest level of Bur-

(Concluded on page 50)

Cambridge's Tremendous Accelerator

WE CANNOT SAY NOW *what new knowledge may come from experiments here. But we intend to put our best efforts, with those of other research centers in the U. S. and abroad, to increasing man's knowledge of the elementary particles and their interactions. We share the hope of other physicists that some day discoveries at such centers will make possible a comprehensive theory of matter.*

—PROFESSOR M. STANLEY LIVINGSTON

BY WILLIAM STILES

Harvard News Office Science Writer

THE so-called "University of Cambridge"—Harvard and M.I.T.—now has an accelerator producing the world's most energetic beam of electrons. This is the seventh nuclear accelerator in the community and much the largest. It is a \$12,000,000 instrument, built at Harvard with Atomic Energy Commission funds, and is to be available to scientists from other institutions as well as M.I.T.'s and Harvard's physicists and advanced students. Its electrons traveling at very nearly the speed of light are expected to make the Cambridge area one of the world's leading centers for the study of particle physics.

Designed by scientists and engineers of both the schools in charge of it, this synchrotron has unusual features as well as tremendous power. It employs "strong focusing" magnets credited to its Director, Professor M. Stanley Livingston, and others, and a new choke for storing magnetic energy which was suggested by Harvard's Professor Edward M. Purcell.

The principal components of the new instrument are:

1) A linear accelerator, which injects low-energy electrons already traveling at close to the speed of light into a circular accelerator.

2) A vacuum chamber, shaped like a slender doughnut, 236 feet in diameter, inside which the electrons are spun.

3) Forty-eight magnets, forming a closed ring, which focus the flying electrons in their circular path, and a power supply to excite the magnets.

4) A radio-frequency system, which gives the electrons a series of electrical "kicks."



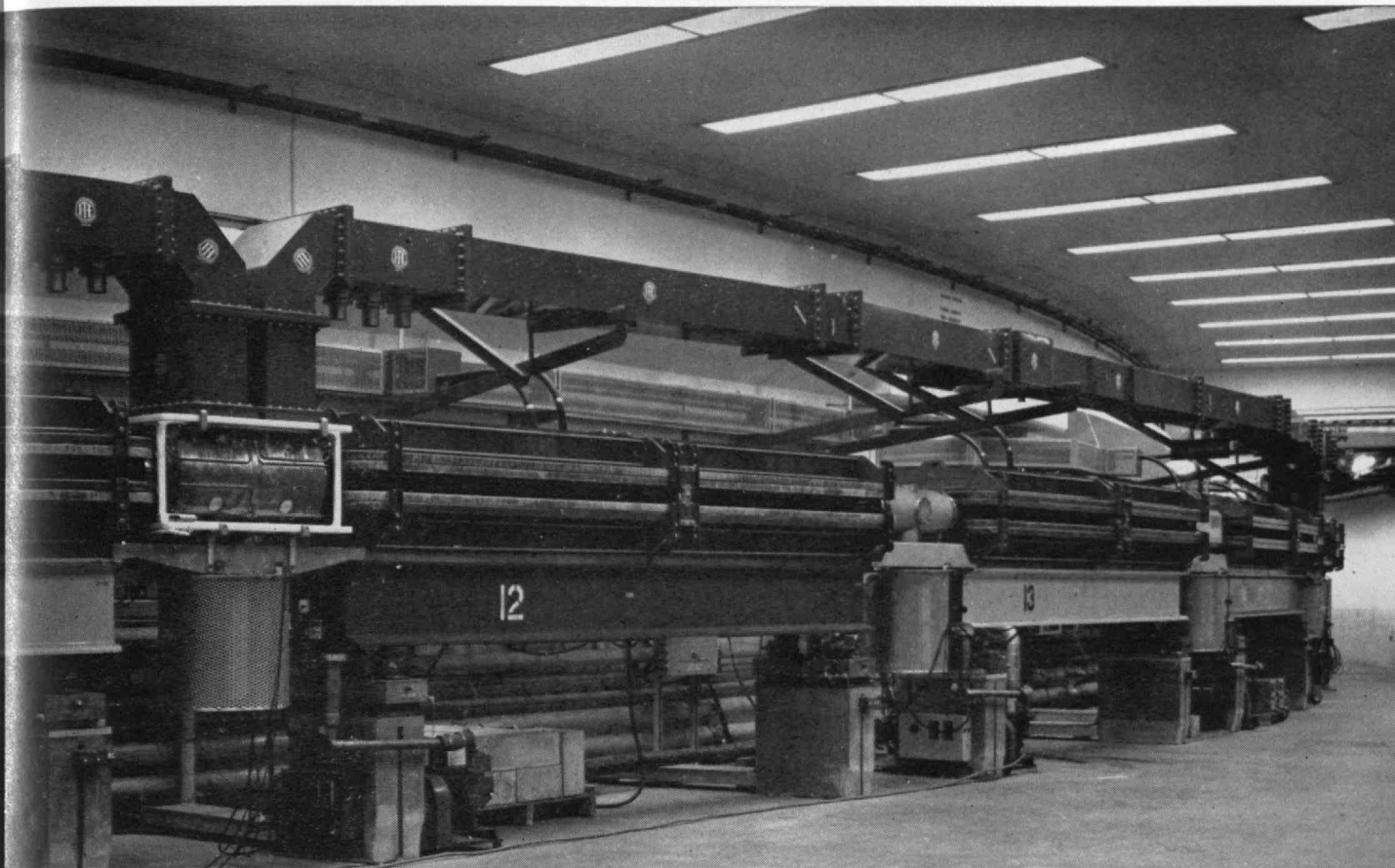
Men responsible for the new accelerator include (from left) Professors Ramsey, Livingston (the Director), and Deutsch.

The electrons enter the race track at an energy of 25 million electron volts. They accumulate this energy as they travel down the linear accelerator on the crests of radio waves, much like surfboard riders on ocean waves. They are directed tangentially into the synchrotron orbit in a short pulse when the magnetic field is small.

The Acceleration Process

The race track for the electrons is a hollow stainless-steel doughnut, about 1.5 by 5 inches in cross section. A series of electronic pumps maintains a high vacuum inside this doughnut so that stray air molecules don't get in the electrons' way. The track runs between the jaws of 48 C-shaped magnets, each 12 feet long and weighing six tons. These magnets, set three feet apart, bend the path of the electrons into a circular course.

Electrons traveling in the doughnut tend to spread out both horizontally and vertically, and the magnets must focus them in both directions. A magnet that focuses strongly in the horizontal direction tends to defocus in the vertical direction, and vice versa. Consequently, until 1952, accelerator designers had to settle for "weak focusing" magnets, in which the field strength varied only slightly across the orbit, and to achieve even this weak focusing the magnets had to be huge. In 1952, Professor Livingston and two others discovered a design principle called "strong focusing." If magnets which strongly focus vertically are alternated with magnets which strongly focus horizontally, they found that the result is focusing in both directions. And these magnets need not be anywhere near as large as weak-focusing



The accelerator is in an underground circular tunnel. Three of its 48 slab-shaped magnets can be seen in this picture.

magnets. The trick is to make the magnetic fields just the right shape and set them just the right distance apart. The principle is called "alternating gradient focusing," since the strength of the field of one kind of magnet increases radially, while the strength of the other kind decreases radially.

The electrons are accelerated in a series of 16 radio-frequency cavities spaced around the race track. Each cavity has two regions of electric field, and gives an electron two kicks as it passes through. In making one orbit, an electron's energy is kicked up 32 times. When an electron has spun around 10,000 times, its final energy is 6 billion electron volts (bev.).

The 16 cavities are connected by "waveguide" links to form a circular array 750 feet in circumference, fed by a radial waveguide run from the radio-frequency power supply in the center. The cavities and waveguide links are all tuned to resonate at the same frequency.

How They Are Bunched

The linear accelerator feeds electrons into the race track in 60 pulses, or bunches, per second. Each packet of about 100 billion electrons enters the race track, is spun around 10,000 times, and leaves with an energy of 6 bev. before the next pulse enters. All this happens in about 1/120th of a second.

Each packet must remain more or less intact while making the 10,000 circuits, and synchronous radio-frequency acceleration makes this possible. The 32 electric fields oscillate at high frequency, varying from zero

At the left is one of 16 radio-frequency cavities. The long rectangular box which dips down to it is the waveguide.

to maximum and back to zero 475 million times a second. The electrons arrive at each "kicking station" as the strength of the electric field in the cavity is falling. An electron that gets too far ahead of the others arrives early and gets a slightly larger energy boost at the next station; its orbit widens a bit and it tends to fall behind and rejoin the main group. Conversely, an electron that arrives late gets a weaker energy boost, its orbit shrinks a bit and it catches up with the main group. The electrons thus become tightly bunched around a "stable" phase for synchronous acceleration.

The Increase in Mass

As the electrons gain energy, the strength of the magnetic field increases from zero to about 8,000 gauss, and as the magnetic field increases the radio-frequency system adds energy to the electrons at just the rate to keep the orbit location in the doughnut. Most of the energy supplied by the cavities goes into boosting the electron's mass, since its velocity cannot be increased above the speed of light. The mass increases 12,000 times by the time the electron reaches 6-bev. energy.

As they approach maximum energy, the electrons radiate off some of their energy in the form of light and x-rays. To compensate for this energy loss, the 32 electric fields in the cavities are driven to much higher voltages at the end of the cycle, but at the same frequency. Above an energy of about 6 or 7 bev. the loss of energy is too great to maintain stable acceleration.

For some experiments 6-bev. electrons will be shunted out of the machine, through channels in the shield-

ing wall, into the experimental hall. Other experiments will call for a high-energy beam of photons (particles of light and other forms of electromagnetic radiation) and these will be produced by inserting special targets into the circulating electron beam in the orbit. As many as six electron, or photon, beams can be directed toward different areas of the hall.

Physicists need accelerators such as this for two reasons: to see very small objects, and to create the strange particles and anti-particles which they are now studying.

The Accelerator as a Microscope

Some objects, too small for a biologist to see in a regular microscope, can be observed in an ultraviolet microscope because ultraviolet light has a shorter wavelength—and is thus more energetic—than visible light. In an electron microscope, in which electrons have an even shorter wavelength than ultraviolet light, objects as small as protein molecules are revealed. To illuminate something as small as a proton or a neutron, a stream of electrons or of protons must have an even shorter wavelength, i.e., must have an energy of many millions of electron volts.

To be seen, an object must somehow disturb the waves of light that pass around or through it. Imagine a cork bobbing in the ocean as the waves pass under it; the waves are much too big and slow to be affected by the tiny cork. But a cork floating on a puddle of water would disturb the small ripples (short wavelength) passing over the surface. By studying how these waves are deflected and altered by the cork, a scientist could get some estimate of the shape and position of the cork and its weight. Even if the cork were invisible to his eyes, he could "see" it by the pattern of ripples it produces. The swift stream of electrons in an accelerator is much too energetic to be focused into an image. But no matter. The electrons are powerful enough to get close to an atomic nucleus, or to a single proton or neutron; and their wavelength is small enough to be disturbed by the tiny particles and forces they encounter.

By measuring how the electrons are scattered by the nuclei of atoms, a physicist can derive important properties—size, for example, or the distribution of mass,

of electric charge and of magnetic field. At higher energies the picture provided by the electrons sharpens: the particles penetrate to within the dimensions of single protons or neutrons to reveal the fine structure of these tiny parts of the nucleus.

Research of this kind—electron-scattering by targets—won a Nobel Prize in Physics for Robert Hofstadter of Stanford in 1961. Hofstadter used electrons from the Stanford Linear Accelerator to "illuminate" hydrogen nuclei (protons) and found that they have a dense core, becoming "fuzzier" toward the outside. Later, when the energy of the Stanford machine was increased from 0.6 to 1 bev., he was able to look more closely at single protons and neutrons. Physicists now believe that the protons and neutrons are made up of concentric clouds of mesons (a short-lived particle midway in mass between an electron and a proton). With the higher electron energy at the Cambridge Electron Accelerator, physicists will be able to derive still sharper pictures of protons and neutrons and more accurate measurements of the force which binds them together into nuclei.

Creating Strange Particles

The powerful accelerators built in recent years have provided physicists with a bewildering assortment of particles and anti-particles, all paid for with energy. As accelerators get bigger, more of these particles can be made for study—and new types show up. Bubble chamber pictures (like the one on page 13) have revealed the existence of many such particles.

A particle can be created by hitting a suitable target, such as hydrogen, with a proton, or with a photon, whose energy is high enough to create the rest mass of the particle. In effect, mass is bought with energy. Hyperons, for example, a class of particles each having a rest mass greater than a proton's, cost over 1 bev. each.

For every particle there seems to be an anti-particle. For charged particles these twins are identical except for the sign of their electric charge. Neutral particles also have anti-particles, differing in a way not yet understood.

The Cambridge Electron Accelerator is powerful enough to create all of the known particles and anti-particles and in sufficient quantities so that their proper-



The tall white tower provides cooling for the big magnets. The structure aboveground at left is the experimental hall.



The experimental hall at one side of the accelerator is about the size of a football field. Up to six electron or photon

beams can be sent into it. Concrete and steel blocks used as shielding are moved about with the help of a 40-ton crane.

ties can be accurately measured. High-energy photons will be aimed at hydrogen nuclei (protons) to produce, from the energy of collision, particles and anti-particles in pairs. After it has slowed down, an anti-particle will explode when it meets one of its normal cousins; but it will last long enough for physicists to study it.

Hopefully, studies made with the help of accelerators such as this one will lead to a general theory of matter to explain the stable protons, neutrons, and electrons and their relation to the unstable excited states of matter. Meanwhile, physicists have come up with a variety of rules of thumb to account for what they observe. One rule of thumb, called Baryon Conservation, says that whenever a baryon (the class of "heavy" particles that includes protons, neutrons, and hyperons) decays, one of the products is always another baryon; the only way to create a baryon is to create an anti-particle simultaneously; the only way to get rid of a baryon completely is to bring it into contact with its anti-particle. No one knows why the rule holds.

Another rule, called the Conservation of Strangeness, accounts for the strong interactions among protons, hyperons, heavy mesons, and others, during collisions. The rule assigns a "strangeness number" of 2, 1, 0, -1 or -2 to the particles and says that the sum of the "strangeness" of the reactants in a strong interaction equals the sum of the strangeness of the products. No one knows the meaning of this rule either.

High-energy physics today may be compared to astronomy in the Sixteenth Century. Astronomy then had accumulated many observations about the motions

of the planets, and Kepler had discovered a few rules of thumb that predicted the relative movements of the heavenly bodies. But it remained for Newton to tie all these facts and rules together into a comprehensive theory of gravitation. Particle physicists have their phenomena and their rules of thumb. They await a Newton.

The People Involved

The Cambridge installation has a staff of 125 physicists, engineers, technicians, and administrative personnel. Next to the accelerator is a laboratory headquarters building—containing workshops, laboratories, electronic computers, stockrooms, and office space—and an enormous experimental hall. Plans for the safeguarding of personnel against the penetrating radiations have been developed with the active collaboration of the Division of Occupational Medicine at M.I.T. and the University Health Services of Harvard.

The operating policies are guided by a joint Harvard-M.I.T. executive committee: from M.I.T., Provost Charles H. Townes, Vice-president Carl F. Floe, '35, and three physicists, Professors Martin Deutsch, '37, and Bernard T. Feld, and Associate Professor Louis S. Osborne, '50; and from Harvard, President Nathan M. Pusey, Administrative Vice-president L. Gard Wiggins, and three physicists, Professors Norman F. Ramsey, Richard Wilson, and J. Curry Street. About 30 scientists and engineers have co-operated in the design and construction of the accelerator. Major contributions were made by Thomas L. Collins, Assistant Director, and David D. Jacobus, '30, Chief Mechanical Engineer.

Talk of Our Times

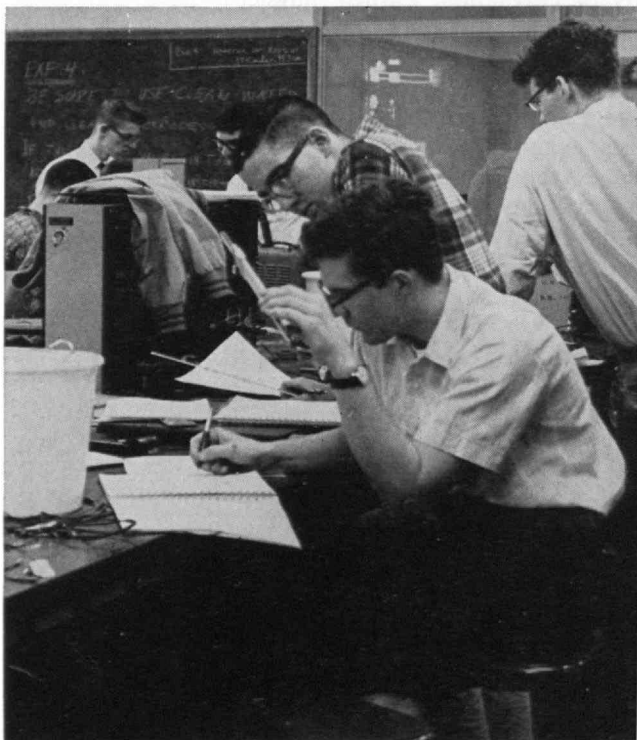
What Students Ask of Teachers

At a recent regular meeting of the M.I.T. Faculty, WILLIAM SPEER, Associate Dean for Student Counseling, discussed students' perception of their M.I.T. experiences, and emphasized the obligation of the Faculty "to provide the first-rate, as well as to expect it of its students." But what is the best possible teaching? Dean Speer dealt with this question in part as follows:

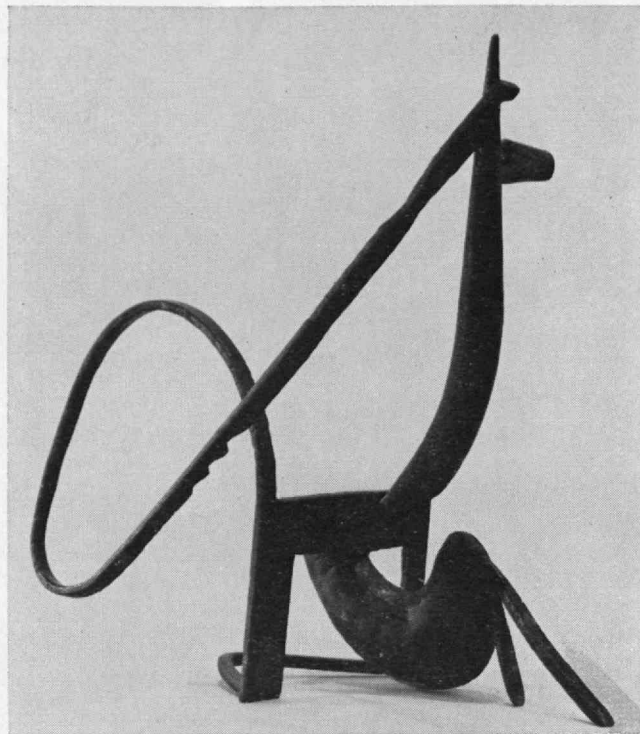
OBSERVATIONS about learning that are drawn from a Dean's Office experience may be no different from the observations of anyone else who listens to students in the same way, but we in the Dean's Office have more time for this kind of listening and do more of it . . .

A student is like a new employee of a timber company set down in unfamiliar woods. He has a smattering of woodcraft, but he has relatively little ability, when the trail is invisible or obscure, to decide which way to go to reach his destination. The teacher is like an experienced guide who knows all the main trails, and who also has the highly developed ability, when he is in a part of the woods that is unfamiliar to him, of sensing the right direction.

The student, by this analogy, has two jobs. He has to learn the main trails. He also has to learn how, without a guide, to find his way through pieces of unfamiliar country. Lectures and recitations are equivalent to traveling with the guide. Homework problems and quizzes are equivalent to being on his own.



Thinking out loud sometimes helps in unfamiliar areas.



ART that seemed to have come from a blacksmith shop filled the M.I.T. Hayden Gallery for two weeks this winter. It was the work of David Smith, of Bolton Landing, N.Y., a sculptor who uses hard metals exclusively and varying techniques that have aroused much interest. The steel example above is "Swung Forms" and was produced in 1937.

A good guide, to him, is one who cares whether he gets lost or not, who helps him to see the forest in spite of the trees, and who can in time communicate some of the art of finding his way alone.

What many a student believes would help him would be an opportunity, with a guide behind him, rather than in front of him, to try to think his own way through a piece of unfamiliar territory. If he makes a wrong turn, he does not want the guide to tell him in which direction to go, but does want the guide to say, "Now stop. Look around you. What have you learned so far that suggests the right direction?" In short, to use mathematics or physics as an example, he would like a chance to think out loud in the presence of someone who could detect the point at which he fails to think like a mathematician or a physicist, and could, at that point, help him to see both where and why he lost the trail.

Theoretically this is the kind of help students are supposed to get in individual conferences. But it is wishful thinking to believe they get it as frequently as they should. . . . It is my guess that help of an hour or two of this particular kind, if available when the student needed it, would often make a significant difference in his future learning efficiency. Sometimes it might make the difference between success or failure. More often it might make the difference between continued blundering success, or the beginning, on the student's part, of efficient, intelligent success.

My guess is that the dividends from this kind of help would be significant not only in terms of more efficient learning, but also in terms of more positive attitudes toward learning.

What Happened to the Dipoles?

Lincoln Laboratory explains why they did not form a reflective belt around the earth and the U.S. announces another launching

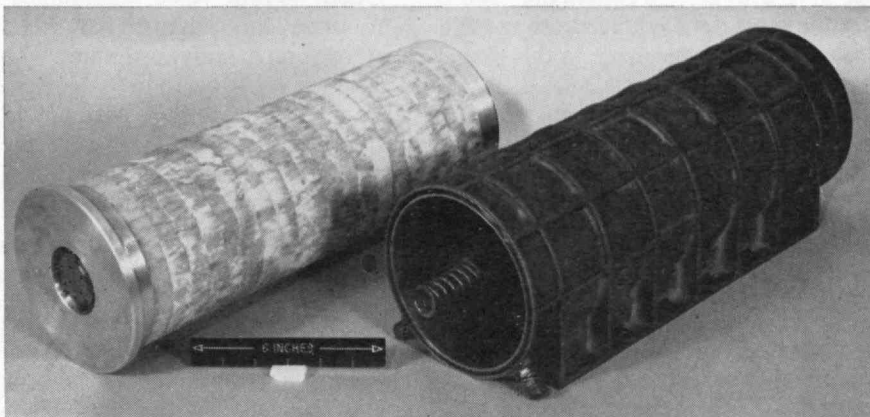
A SECOND ATTEMPT to place a belt of orbiting dipoles around the earth for communications research will be made this year, the Space Science Board of the National Academy of Sciences reported in March. At the same time, Lincoln Laboratory reported the solution of the "Mystery of the Missing Dipoles": the 350 million tiny copper fibers launched last October are still in orbit, some 2,000 miles above the earth, but are clumped together in five or six small bunches.

A mechanical malfunction in the dispensing mechanism now has been identified and successfully reproduced in the laboratory under simulated space conditions, and the design of the package has been changed to prevent a recurrence of the difficulty next time.

The Detective Work

Lincoln Laboratory's report of what happened last fall was forwarded in March to the International Astronomical Union by a project advisory committee named by the National Academy of Sciences.* That report described both some remarkable detective work and some new findings in associated research.

Why were the dipoles not dispensed? They were tightly packed together in disks along a central shaft in a package to be ejected from a container. This package was to have been given enough spin when ejected to cause the fibers to fly apart. But the package was shaded from the sun the way it was mounted on the launching vehicle and became cool enough to be slightly distorted. This resulted in slippage when it was



Dipole dispenser package used last fall had fibers in cylindrical stack (left) in a canister, from which the package was ejected by a coil spring.

ejected, which gave it more linear velocity and less spin than was planned. The fibers consequently clung together and no belt was formed. A few hundred dispersed fibers should have sufficed to return detectable echoes, but an exhaustive search revealed none.

How was the difficulty pinpointed? Telemetry data showed that the package was ejected with more linear velocity than had been planned. This was confirmed by Millstone Hill UHF radar observations of the package in orbit. It broke into pieces, and the rate at which these fragments moved apart was measured by radar—even though the fragments are only about the size of baseballs and more than 2,000 miles above the earth. Calculations based on these measurements indicated that the package had been ejected with only one-tenth of the expected spin rate.

The thesis that slippage and a low spin rate kept the dipoles from dispersing was tested in a laboratory experiment. High-speed photographs were taken of a package in free fall in a large environmental test chamber at low pressure and low temperature. The weakness of the centrifu-

gal force available at the low spin rate to disperse the dipoles was thus confirmed.

What changes are planned? After finding that the dipoles had not been and could not be dispersed from the package launched last fall, Lincoln Laboratory recommended:

- 1) Redesign of the package to prevent slippage and ensure the desired spin.
- 2) Addition of a VHF beacon and telemetry to indicate the package's position, temperature, spin rate and tumble rate, and the extent of dipole dispensing.
- 3) Reduction of the number of dipoles from about 350 million to less than 250 million to make room for such telemetry equipment.
- 4) Use of a triggering device controlled from the ground, by which the experimenters can make certain that the dipoles will only be released while in a suitable orbit in which they will have only a limited lifetime.

These changes, the Space Science Board's committee believes, will provide "a significant measure of control and surveillance over the behavior of the package."

At least as much effort as has gone into dipole-dispensing arrangements

* John W. Findlay of the National Radio Astronomy Observatory is chairman, and Professor Frederick T. Haddock, Jr., '41, of the University of Michigan is a member of this committee.

has been devoted to other aspects of the experiment. High-power transmitters, very sensitive receivers, and large precision reflectors, for which there are also other uses, have been built for this project.

The two stations at Westford, Mass., and Camp Parks in Pleasanton, Calif., already have been employed in extensive measurements of reflections from the moon. These have been made at X-band frequencies (near 8,000 megacycles per second, 3.6 cm. wavelength) and are the most detailed, accurate radar measurements ever made in this part of the spectrum.

"The surface of the moon resembles an orbital dipole belt as a reflector of radio waves in two important respects," Lincoln Laboratory pointed out in its recent report. "First, it produces many multiple reflections from somewhat different distances, each reflected signal arriving at the receiving point at a slightly different time: thus a single transmitted pulse produces a smear of many overlapping pulses of various amplitudes at various arrival times, and the modulation-demodulation system must bring order out of this chaos without sacrificing precious power from the already feeble reflected signals. Second, because the reflecting elements are moving at various different velocities with respect to the fixed transmitter and receiver, the received signals will no longer be at the same frequency as the transmitted signals: they will be smeared over a much wider range of frequencies, and the modulation-demodulation system must cope with this kind of distortion as well. . . .

"Using advanced techniques of modulation developed for the Project

West Ford experiment, the ground stations have achieved digital data transmission rates, over the transcontinental lunar-relay circuit, of 50,000 bits per second, a capacity that would accommodate hundreds of simultaneous teletype channels, considerably greater than the capacity of lunar relay circuits currently in operational use. . . . These . . . are encouraging omens of ground-station performance in testing the Project West Ford belt."

Good quality voice communication over this circuit has been achieved repeatedly. Alumni who heard the voice of John J. Wilson, '29, at their meetings throughout the country last October, were the auditors of an early demonstration of speech bounced off the moon from California to Massachusetts.

An Important Precedent

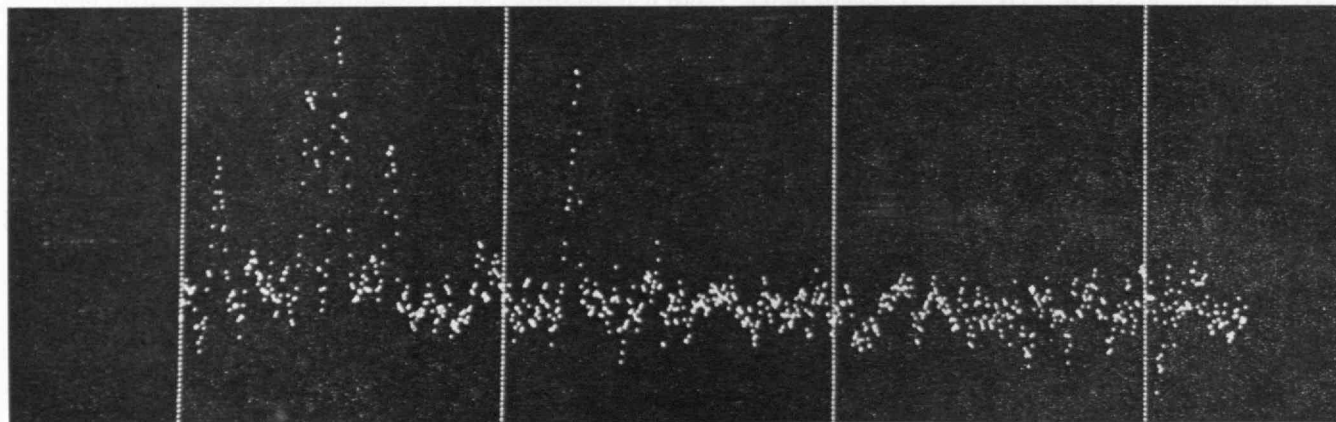
Ever since the idea of using orbiting dipoles to reflect signals was first advanced, some astronomers have been voicing concern lest the fibers interfere with their research. A technical review of Project West Ford undertaken by the President's Science Advisory Committee showed that far more material than the United States had proposed to launch would be required to absorb or scatter the natural radiation helpful to astronomers. The White House, furthermore, directed that scientists everywhere be given an opportunity to evaluate this experiment's environmental effects.

A thin orbital belt of fibers designed to reflect radio waves of a particular wavelength would have significant advantages over any other presently proposed technique for long-distance radio communication by means of satellites. All the com-

plex electronic equipment is on the ground, where it can be serviced or altered at will. A dipole belt, moreover, would be quite invulnerable to physical damage of any kind: even if hostile action were to cause gaps in the belt, the remaining parts could still be used for communication, and the gaps would gradually be refilled by the dipoles still in orbit.

The American government's policy did not fully satisfy all of the idea's critics, but was vigorously defended in the February issue of *New Scientist*, a British publication, by Professor E. M. Purcell of Harvard.

"In our time," he wrote, "technology has brought about irreversible environmental change on a large scale. It will bring about others, intentionally or otherwise. Our civilization is changing the CO₂ content of the atmosphere: our rivers carry the effluent of industries into the seas: already hundreds of tons of spent rocket fuel have been exhausted over the atmosphere. Even desirable changes will seldom be manifestly benign in every aspect. Shall we take charge of our affairs like rational men? If objective balancing of risks can never justify an irreversible action, responsible action is simply blocked. . . . My government had a valid reason for wanting to distribute 75 lbs. of copper through 10 million cubic miles of space. It brought the question into the open, a year ahead of time, for quantitative examination by the world scientific community. The action taken was, in my view, responsible and rational. I suspect that the . . . precedent will prove to be the most significant result of West Ford, whatever the future may hold for the mode of radio communication."



This output of CG 24 Computer is typical of data used to measure the distance between fragments of dipole package.

Horizontal scale is time. Vertical displacements occurred as pieces passed through stationary beam straddling their path.

How We Appraise and Use Food

More sophisticated analysis of its composition can help us solve the world's nutrition problems

RECENT ADVANCES that can help solve nutrition problems and possibly explain the prevalence of some degenerative diseases were described this spring at an M.I.T. conference on man's nutritional status. Sponsored by the National Vitamin Foundation, Inc., and the Department of Nutrition, Food Science and Technology, it brought 300 persons—including many Alumni—to the Institute to consider methods of appraising foods and determining the nutritional requirements of individuals.

The objective, in the words of the conference chairman, Professor Nevin S. Scrimshaw, was to contribute to "the more efficient relief of the world's nutrition problem and to a better utilization of the world's food supply." An Expert Committee of the World Health Organization will meet in Geneva next August and this conference was planned to assemble background information for its deliberations.

Encouragement for Nibblers

To laymen, one of the most interesting papers was one about nibbling between meals that Dr. Clarence Cohn, '36, and his associates at the Michael Reese Hospital in Chicago presented. Eating more often than three times a day, Dr. Cohn suggested, may reduce a person's protein requirements and his susceptibility to metabolic diseases.

The research which he reported has shown that the periodicity of food intake can affect the results, and that food consumed in substantial meals is handled differently than that taken in smaller amounts and more frequently. Animal breeders as well as people, he pointed out, can benefit from such study since it may be possible to increase the protein content and decrease the fat content of meat by feeding farm animals more frequently. Dr. Cohn emphasized that more study of the manner in which food is ingested is needed, but noted that it is a topic which students of nutrition should find challenging.

Questions of Analysis

Food analysis, Professor Robert S. Harris, '28, of M.I.T., told the conference, must become increasingly complicated and sophisticated to meet the needs of nutrition science.

Tables of food composition compiled without regard for the nonnutrients and antinutrients present in many foods, he observed, can be misleading. Traditional methods of determining the moisture content, estimating the mineral content, and calculating the amount of protein in food, he contended, are inadequate in the light of modern knowledge.

"We now know," he said, "that foods contain over 60 different amino acids and that at least eight of these are essential because the human body does not have the capacity to synthesize enough of them to meet its needs for growth and for replacement of body tissue. Practical methods are now available which will permit an analyst to estimate the kinds and amounts of over 20 of these amino acids in one day or less, and with considerable accuracy. This is an important recent advance."

Professor Harris expects improvement, too, in the techniques by which the value of a food as a source of fatty acids is determined, and development of a new approach to the carbohydrate problem.

"Tables of food composition," he predicted, "will present increasingly more data in the future on the kinds and amounts of specific amino acids, fatty acids, carbohydrates, and minerals, just as these tables now present data on the kinds and amounts of specific vitamins. They will also contain data on the kinds and amounts of compounds present in food which destroy nutrients or interfere with their absorption of metabolism."

M.I.T. Participants

Members of the M.I.T. Faculty and Alumni have played prominent roles in many of the developments described, and participants in this conference included:

Guillermo B. Arroyave, '49, of the Institute of Nutrition of Central America and Panama, who discussed ways of obtaining information about protein intake and nutritional status, and was chairman of a session devoted to biochemical methods.

Alfred E. Harper, Professor of Nutrition, who dealt with intrinsic and extrinsic factors that affect estimates of the efficiency of protein utilization, discussed ways of making such estimates, and called attention to a recently worked out Net Dietary-Protein Value which promises to be helpful.

Donald M. Watkin, Associate Professor of Nutrition, whose topic was disease factors that complicate the nutritional status of man, and who pointed out numerous ways in which nutrition surveys can be improved.

Bringing about such improvements, he declared, will require a cadre of informed, devoted individuals supported by newly trained personnel. "In this particular case," he said, "money is more readily available than the personnel. It is to be hoped that symposia such as this will demonstrate the need for more and better personnel in the field of clinical nutrition, and will convince those now standing at the periphery that in this field lies an exciting, rewarding career, with plenty of room at the top."

The Human Response Equation

M.I.T. mechanical engineers even use a deceitful auto to study the problem of allocating roles wisely to men and their machines

BY THOMAS B. SHERIDAN, '59

Assistant Professor of Mechanical Engineering

AT THE Greenwich Observatory in 1796, stellar transits were observed by counting seconds synchronously with a clock, noting the two counts between which a star passed a cross hair, and interpolating to the nearest tenth of a second. It happened that the senior astronomer consistently observed transits in this way almost a second sooner than his assistant. On this basis he dismissed his assistant—and their ensuing quarrel brought to scientists' attention the still bothersome question of the proper employment of men and machines.

Twenty years later at Königsberg the great astronomer-mathematician, F. W. Bessel, read of this incident at Greenwich, saw in it a fundamental problem, and began collecting data on the "personal equation" in stellar observations. The human reaction time, he found, not only varied consistently from person to person but with the observed speed and magnitude of a star. This posed a practical problem for the astronomers and a great deal was written about it in the middle 1800's.

To explain interpersonal variations, it was widely assumed that people's neural processing times differed. Bessel and later the physiologist, J. Hartmann, also noticed, however, that a person's response time for an unexpected event was longer than for one he anticipated. It later became clear that some observers tended to compensate for the inherent processing time of the nervous system by anticipating their responses to some stimuli and beginning those responses before actually receiving the proper stimuli.

The 1880's saw the first formal laboratory study of human behavior in Leipzig, and a central research problem was the "chronometry of the mind"—the specification of the components of reaction time. Human response was considered as a simple series of mental functions, each of which took a more or less constant time, and the number of functions required depended upon the complexity of the response situation. The quickest and most basic response consisted only of an "inherited reflex"; a "voluntary impulse" time increment was added if the reflex was learned. To this was added an incremental "perception" time if attention was focused on the response movement, and time for "apperception" if attention was also focused in the stimulus. An extra time increment for "cognition" was required if the response was made to several stimuli, plus "association" time and maybe "judgment" time, too, depending on the mental gymnastics required of the human subject. After much experimentation with tasks of different complexity, it was concluded that the incremental times were too unreliable to be of much use, and that changes in the task affect the human response equation *in toto* instead of merely adding an additional part.

As servomechanisms and a theory of automatic control were developed in the 1930's and 1940's, the human operator of a machine came to be visualized as a component in a closed control loop, noting the difference between the actual and an ideal state of affairs, and repeatedly responding with his muscles to correct this difference. Viewed in this

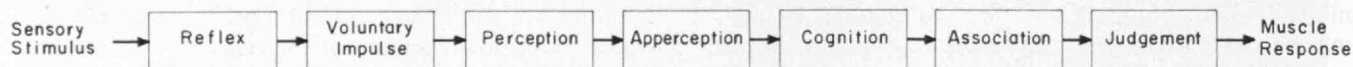


Human response has been studied with oscilloscopes and joy sticks in the laboratory in recent years.

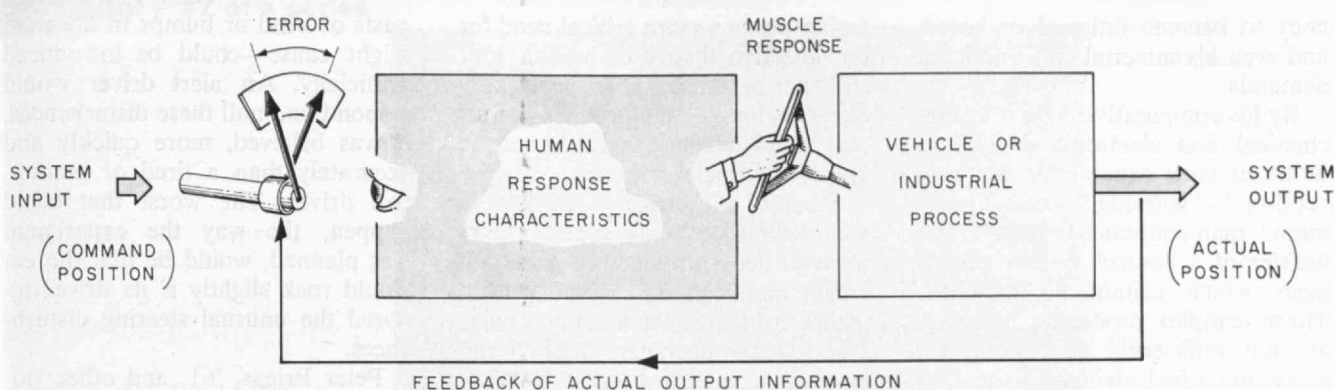
way, human responses could be studied in a laboratory by seating a man in front of a cathode-ray oscilloscope and giving him a joy stick with which to keep a spot of light centered, while the experimenter introduced various disturbances.

Professor Arnold Tustin of Imperial College in London (who was a visiting professor of Electrical Engineering at M.I.T. in 1954) was probably the first to provide a generally accepted formulation of human response characteristics. Along with many other university, government, and industrial laboratories, the M.I.T. Research Laboratory of Electronics, the Electronics Systems Laboratory, and Lincoln Laboratory have at various times been active in developing mathematical descriptions of the human operator's behavior.

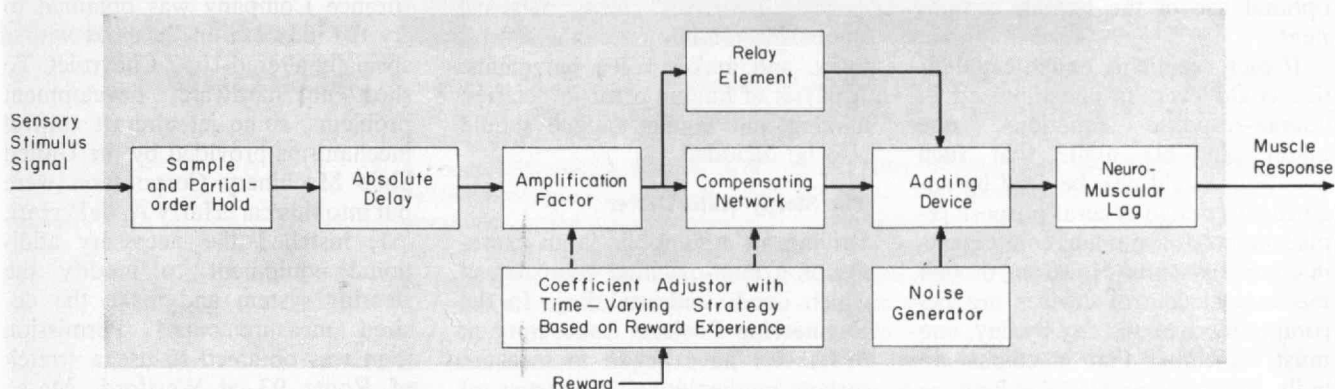
These equations relate what a man sees to what he does when performing a particular task or controlling a particular machine. They are



A block diagram suggests the awkwardness of early efforts to specify components and thus study human reaction time.



Man-machine control system is typically pictured this way now where the block representing the human is shown below.



expressed in terms similar to those used for describing an electrical network. For simple tracking tasks, one can predict a person's response by such an equation to within 5 per cent. But the constants in this equation are not constant in the ordinary sense of the word; instead, they depend upon certain properties of the task, i.e., the frequency and amplitude of the "target" that the human operator is trying to follow, the inertia or stiffness of the "handle" that he can move, and the sluggishness or oscillatory properties of the vehicle or mechanism he is controlling. Thus the human response equation may indicate quicker muscle movements for pogo stick operation than for bicycle riding.*

The coefficients of such an equation have been compiled for various experimental situations and—somewhat cautiously—the resulting equations have been applied to the design of automobiles, submarines, and air and space craft.

What Men Can Do

Even to attempt to develop a human response equation generally applicable to political machinery, modern

*That the human response is quicker for pogo stick operation doesn't necessarily mean that the man-pogo stick system is faster than the man-bicycle system.

art, or mother, would be presumptuous for an engineer. In a great variety of vehicles and industrial processes, however, people are called on to respond to certain stimuli merely by moving certain muscles in certain ways. Quantitative specification of the human component in such vehicles and processes can contribute to the analysis and rational design of the required mechanical, electrical, and other physical components.

Although some such data can be obtained now in forms that engineers can use and understand, the present state of the art leaves much still to be learned. In very simple control tasks, a fairly inexpensive man-made device is likely to outperform a man.† Why, then, should engineers bother to include a human component in control systems? In tasks for which the human response equations now are adequate, aren't people really obsolete? And if so, isn't it the engineers' job to replace them with faster, more reliable, more powerful components?

This is true in some situations. They are those involving the straightforward continuous control of one variable, and those which require high-frequency responses,

†A thermostat in a home-heating system is an example.

high-power output, continued response for long periods, or operations in environments unsuitable for men. There are other situations, however, in which the human organism's remarkable capabilities make the continued use of men extremely attractive to even the most visionary engineers.

The human eye can "see" a wire only $\frac{1}{8}$ th of an inch in diameter against a clear sky a mile away. A few photons of electromagnetic radiation in the visual spectrum suffice to activate it. Human ears can discriminate between wave forms that differ in time by only microseconds, and almost "hear" the random disturbances or Brownian motion of molecules of air. Yet the human visual and auditory systems are still capable of discrimination at stimulus energy levels 100 billion times their minimal thresholds.

The human being, moreover, can perceive patterns in environmental variables, shift his attention, and monitor many different phenomena simultaneously. Further, a man has a way of making unreliable systems reliable, and this is a major reason for sending him along in space vehicles. Such capabilities in addition to sensory feats offset, in many operations, the human being's slow responses, his limited power, his tend-

ency to become fatigued or bored, and even his material and emotional demands.

By his comparative edge over mechanical and electronic devices in terms of such capabilities as "perception," "learning," and "judgment," man continues to offer to the builder of a control system advantages which cannot be matched. These complex processes, however, are not sufficiently understood yet to be described clearly in the language of the engineer, and this is necessary to enable him to make optimal use of the human component.

If such seemingly exotic capabilities could ever be encompassed in human-response equations, one might plausibly argue that such equations could also be used by engineers to design general-purpose replacements for human components in control systems. However, though mechanical control devices are becoming more exotic day by day, one must remember that machines are built to serve people. As long as people inhabit the world (as we hope they will for a long time) they will be linked with or in charge of its machines. Man's relationship to machines has changed over the past two decades and will continue to change; his muscles have been replaced, his primitive reflexes have been automated, and he is being relegated more and more to a supervisory role. But far from obviating the need for engineering analysis of human response in man-machine systems, man-as-a-supervisory-con-

troller poses a more critical need for an objective theory of human control performance. One need only cite as examples the problems of air and highway traffic control, and the control of nuclear tests.

Studies of simple operationally well-defined manual control tasks have already provided a basis on which man can understand certain of his primitive responses and emulate these by machines. Gradual and systematic extension of such available data must begin to cover situations where the human controller learns, perceives new patterns, shares his attention among several tasks, and makes value judgments. Analysis of human error in decision making and human fatigue should also be included.

The Sleepy Auto Driver

Driving an automobile is an example of a man-machine control task which needs understanding. In the Engineering Projects Laboratory at M.I.T. we have begun to measure certain mathematical properties of the human response equation in driving, which some day may be applicable to testing drivers and monitoring their alertness.

An hypothesis suggested by previous research was that the alertness of a human driver could be measured more directly, reliably, and easily by measuring his response to disturbance signals in the driving mechanism than by other techniques. An experiment was planned last year in which unexpected disturbances—similar to those that

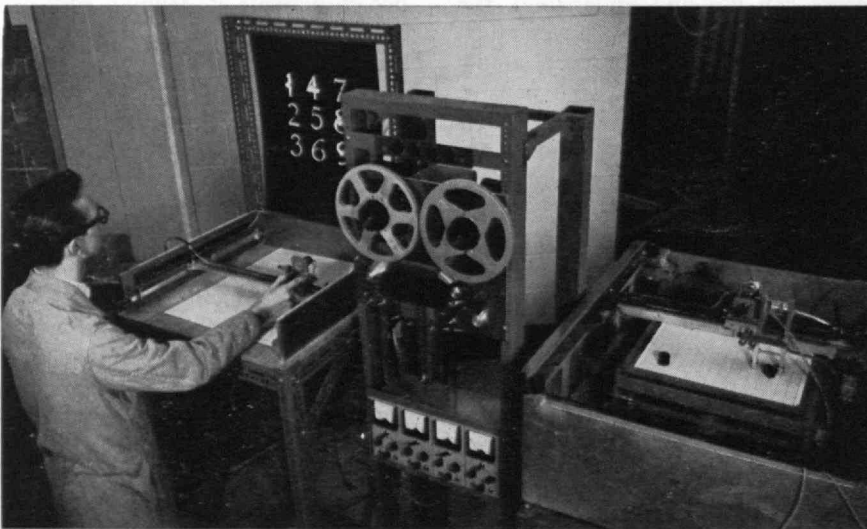
gusts of wind or bumps in the road might cause—could be introduced artificially. An alert driver would respond and null these disturbances, it was believed, more quickly and accurately than a tired or inattentive driver. The worst that could happen, the way the experiment was planned, would be that the car would rock slightly if its driver ignored the unusual steering disturbances.

Peter Briggs, '61, and other students made some initial tests, and a grant from the Liberty Mutual Insurance Company was obtained to try the idea out on the road with a specially altered 1957 Chevrolet. To short-cut hardware development problems, some jet aircraft control mechanisms provided by the United Shoe Machinery Corporation were put into this car. Harry A. deFerrari, '61, installed the necessary additional equipment to modify the steering system and make the desired measurements.† Permission then was obtained to use a stretch of Route 93 at Westford, Mass., which was not yet open to the public.

Four summer session students were tested individually as they drove the car back and forth over this 10-mile course. The steering disturbances introduced artificially were varied. The subjects were tested both when fresh and after being deprived of sleep for 24 hours. In each case the driver's responses to steering disturbances were automatically computed and recorded by equipment in the rear seat.

The results verified the original hypothesis and agreed in most respects with previous laboratory simulator tests. Consistent differences appeared in the response characteristics before and after a driver was deprived of sleep. Large differences between individuals were also noted, however, and these suggested that a practical alertness-measuring device might have to be adjusted in accordance with an individual's response peculiarities.

It is not difficult to envision a new era in traffic control resulting from further study of the human response
(Continued on page 40)



Researcher is controlling movements of slave hand at right on basis of information displayed on screen three seconds after action has taken place. Such problems might arise in controlling a lunar robot from the earth.

†This was done in the parking lot adjacent to Building 3, and repeated questioning from construction crews then working there posed unforeseen problems in human responses. "Whatcha got, sonny, a hot rod?"



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Institute Yesteryears

25 Years Ago . . .

UNDER A HEADING "Laboratory Paradox," The Review reported: "Some of the striking discoveries of research have been the result of studies which had entirely different objectives. An example of one of these paradoxical discoveries occurred recently when two Institute biologists, seeking a diet of uniform effectiveness for producing rickets in rats, found an unsuspected antirachitic property in milk after all traces of the antirachitic vitamin D had been removed.

"Three years ago Professor John W. M. Bunker and Dr. Robert S. Harris, '28, of the Institute's Department of Biology and Public Health, began looking for a protein substitute for ground whole corn, the recognized protein constituent of diets for producing rickets in rats. Their search was prompted by the fact that for some unexplained reason not all corn will produce the disease.

"The need for a protein which could be relied upon to produce rickets led to experiments with casein, the principal protein of milk. The first step was to prepare the protein free of all known forms of the antirachitic vitamin D. Rats fed on this diet, however, not only did not develop rickets, but thrived. Attempts to make casein rickets-producing by predigesting it with enzymes and alkalies were unsuccessful.

"The next step was to change the ratio of calcium to phosphorus in the diet, for it is known that a rickets-

producing diet for rats should contain four times as much calcium as phosphorus. [But] diets eight times as rich in calcium, a ratio calculated to produce rickets in its severest form, failed to produce the disease. The conclusion reached [was] that milk has a hitherto unsuspected antirachitic property, and attempts are now being made to determine what part of the casein molecule is responsible.

"What application this discovery may have has not yet been decided. Biologists have suggested that the vast quantities of casein, a waste product of milk processing which represents one of the great losses of agriculture, may prove valuable as a food for poultry and animals."

Named as Presidents-elect were: *Francis R. Hart*, '89, by the Massachusetts Historical Society . . . *Samuel B. Robertson*, '99, by the B. F. Goodrich Company . . . and *Robert E. Wilson*, '16, by the Pan American Petroleum and Transport Company.

Also assuming new responsibilities were: *Eric Hodgins*, '22, as Publisher of *Fortune* . . . *Alan E. Cameron*, '26, as Deputy Minister of Mines for the Province of Nova Scotia . . . And congratulations were being extended to *Louis S. Cates*, '02, upon his decoration as *Commandant de l'Ordre de la Couronne* by the King of the Belgians.

50 Years Ago . . .

ANNOUNCEMENT WAS made on May 10, 1912, that the Institute had received a bequest of \$750,000 by the will of Charles Herbert Pratt to be used for housing and endowing the Department of Naval Architecture and Marine Engineering. As The Review observed: "The bequest was a complete surprise to everyone. . . . Mr. Pratt, who died May 7, was a Boston lawyer who made his home at the Hotel Vendome. He was a bachelor, without near relatives, and practically all his property has been left to the Institute. At the time the will was made the estate was of much less value than now and under its terms the money was to remain invested until it had reached the sum of \$750,000 before it should be turned over to the Institute.

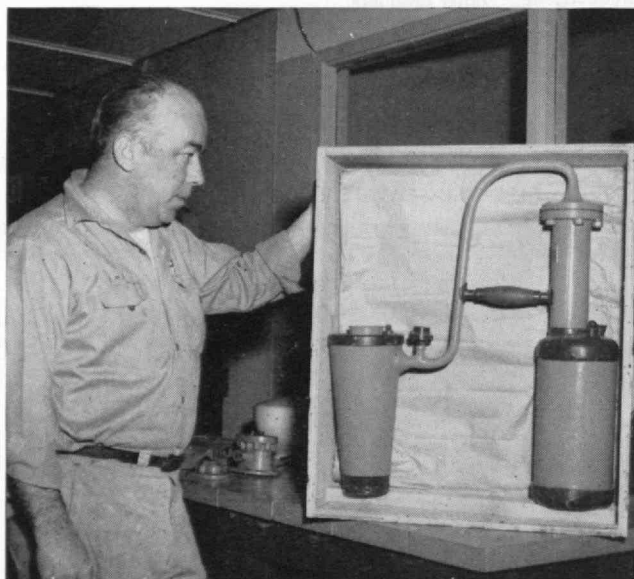
"It is understood that its value has now nearly reached the specified amount and President Maclaurin believes that the building for the Department of Naval Architecture can be erected along with other buildings on the new site in Cambridge."

75 Years Ago . . .

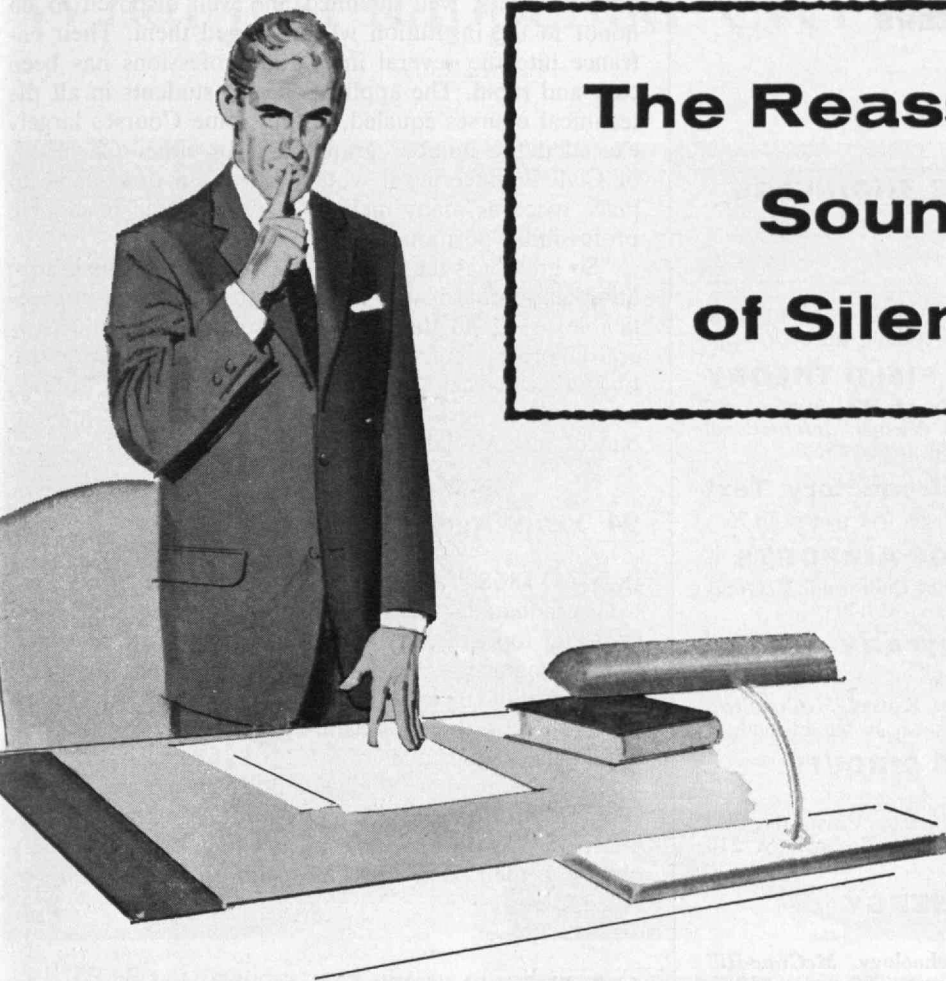
ON MAY 31, 1887, the Institute's 20th class was graduated, 58 in number divided as follows: mechanical engineering, 17; civil engineering, 10; chemistry, 9; mining engineering, 8; electrical engineering, 8; general science, 3; and architecture, biology, and physics, one apiece.

On the previous afternoon, Class Day exercises were held in Huntington Hall of the Rogers Building, consisting of "oration, history, prophecy, ode, statistics, poem, and music." The "officers of the day" were: First Marshal, *Frank E. Shepard*; Second Marshal, *Henry D. Sears*; Aids, *George O. Draper* and *Timothy W. Sprague*.

(Concluded on page 34)



A CARRE TYPE of absorption refrigeration unit left M.I.T. this spring (1962) for the Smithsonian Institution. This kind of ammonia system, in which one vessel was heated and the other put in a refrigerator, was used about 80 years ago. This one was in the laboratory of Associate Professor A. L. Hesselschwerdt, Jr., '31, for many years.



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Institute Yesteryears

(Concluded from page 32)

Of the Class of 1887, President Francis Amasa Walker wrote that it "consisted, without exception, of good students, well qualified and well disposed to do honor to the institution which trained them. Their entrance into the several industrial professions has been easy and rapid. The applications for students in all the technical courses equaled, and in some Courses largely exceeded the number graduating. In either Chemistry or Civil Engineering it would have been practicable to place twice as many men as were available in eligible professional positions. . . .

"So great was the demand for members of the graduating Class, that it was for the first time found impracticable to fill all the vacant assistantships, in the several laboratories, from our own numbers, and we were obliged in two cases to send to other institutions for men to take these positions, and, in a third case, to appoint one of our special students, not a graduate."

94 Years Ago . . .

IN MAY, 1868, 13 members of the Institute's first class were graduated—one in mechanical engineering, five in civil and topographical engineering, six in geology and mining engineering, and one in science and literature. The form of their diplomas stated that each was a "Graduate of the Massachusetts Institute of Technology in the Department of"; for not until 1872 was the designation "Bachelor of Science" adopted.

These fortunate 13 of the Class of '68 were not subjected to formal commencement exercises; they simply obtained their diplomas by calling at the Institute office.*

100 Years Ago . . .

ON MAY 6, 1862, at the rooms of the Board of Trade in Boston, there took place the first official meeting of the Institute as a corporate body. The "Government for the ensuing year" was elected as follows: William Barton Rogers, President; John Amory Lowell, Jacob Bigelow, Marshall P. Wilder, and John Chase, Vice-presidents; Thomas H. Webb, Secretary; and Charles H. Dalton, Treasurer.

An account of the meeting in the May 14 issue of the *Boston Evening Transcript* read in part as follows:

"In the course of the proceedings, the Treasurer, Mr. C. H. Dalton, made the gratifying announcement that he had recently received from the Hon. William Minot, as trustee of the estate of the late Miss Mary Townsend, the sum of three thousand dollars for the use of the Institute. . . ."

This was the first sizable bequest to M.I.T.

* Commencement exercises were first introduced by President John D. Runkle for the Class of 1874, as part of an organized, but not a public, ceremony; and it was not until the graduation of the Class of 1878 that the exercises became a public function at which parents and friends might witness the bestowal of the prized degrees.

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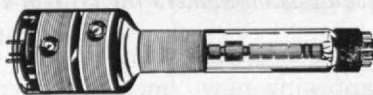
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Individuals Noteworthy

(Concluded from page 8)

Council Honors Wills

THE M.I.T. Alumni Council, at its March 26 meeting, heard President Julius A. Stratton, '23, discuss national scientific problems, and honored the memory of Royal Barry Wills, '18, the noted builder of small homes who died last January 10 after a long and active career.

Resolutions presented by John W. Kilduff, '18, recalled the many honors won by Mr. Wills's houses, his books, and magazine articles, and his numerous services to the Institute as agent for his Class and a member of the Council, Executive Committee, and Fund groups.

President D. Reid Weedon, Jr., '41, of the Association presided.

Senior Executives

TWENTY-FOUR men from 12 states and two foreign countries will complete 10 weeks of study at M.I.T. this month in the School of Industrial Management's executive development program. They are:

Chester W. Carter, United Shoe Machinery Corp.; *Ross Whitman*, The Kendall Company; *Russell H. Hedgecock*, '44, and *Charles W. Sauer*, '41, Arthur D. Little, Inc.; *Asa F. Kinney*, John Hancock Mutual Life Insurance Co.; *Harlow D. Dodge*, Western Electric Co., Inc.; *Howard H. Hennington*, The Equitable Life Assurance Society of the United States; *Henry J. Schwellerbach*, New York Trap Rock Corp.; *J. Herschel Barnes*, Indiana and Michigan Electric Co.; *Frank N. Bien*, Ohio Power Company; *Jack Buchanan*, Thiokol Chemical Corp.; *G. Franklin Collins*, Pittsburgh Plate Glass Co.; *Warren L. Jensen*, Continental Oil Company; *Conrad H. Kollenberg*, Humble Oil and Refining Company; *Edward J. Kondas*, Republic Steel Corp.; *Porter G. Stevens*, American Oil Company; *Kenneth T. Larkin* and *Gladyn H. Putt*, '38, Lockheed Missiles and Space Company; *Clifford A. Phillips*, Tidewater Oil Company; *Hal C. Ransome*, Campbell Soup Company; *Charles F. Negele*, United States Steel Corp.; *Davis Spencer*, Miele-Goss-Dexter, Inc.; *Christopher J. Cross Brown*, Alfred Bird and Sons, Ltd.; *Ronald B. McEwan*, Pretoria Portland Cement Co., Ltd.



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FOR INSTANCE: Phil recently was consulted by a Midwest corporation concerning an unusual marine-construction project in the Boston area. Drawing on his experience, he called to their attention a parallel and precedent which will be helpful in determining the feasibility of the idea. He is also helping to provide other local information needed to advance plans for the construction and financing of the project. If you'd like a man at the top as your firm's financial pilot, make Phil Stocker your company banker. He's at RIchmond 2-4000 now.



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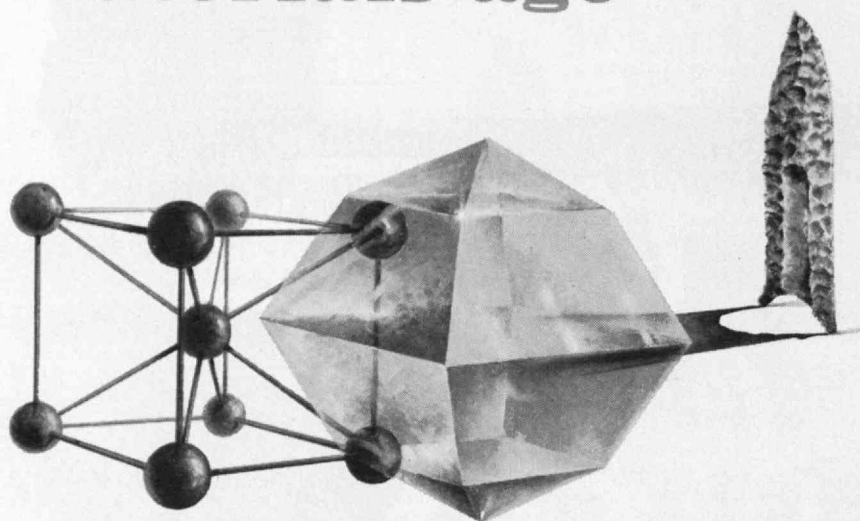
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Recent years have seen a significant change. Science has taken us well beyond the capabilities of existing materials, and we must now look to materials of the future if progress is to continue. Also, industry is constantly searching for better materials to make better products. This demand has created a new materials technology. Here, the physicist, chemist, engineer and mathematician are banding together to probe the basic forces which control the behavior of matter. With tremendous import for the future, man's scientific genius is at last rising to the challenge of the Materials Age.

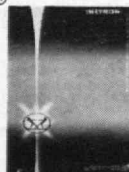
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Feedback

(Concluded from page 3)

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The Dean points out that this accomplishment of METU should not be exaggerated because this result was obtained by replacing electron tubes by transistors in conventional types of equipment. Development work on the carrier unit was guided by Dr. Kenneth Clarke, UNESCO expert on leave from Brooklyn Polytechnic Institute.

The establishment and development of an electronics industry, which is one of the most easily founded forms of industry in the world, will be possible in this country with the success of these efforts.

The School of Engineering expects that the success of this project will lead to similar development work in other fields and industries on a much larger scale after the laboratories move to a new campus 10 kilometers from the present site.

Consultant President
Middle East Technical University
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QUEEN of this year's Military Ball at M.I.T. was Miss Sallie Flowers of Simmons. She was escorted by Cadet Captain George J. Meyers, 3d, '62, of Wyomissing, Pa. He is the son of George J. Meyers, Jr., '29, and a member of Scabbard and Blade.

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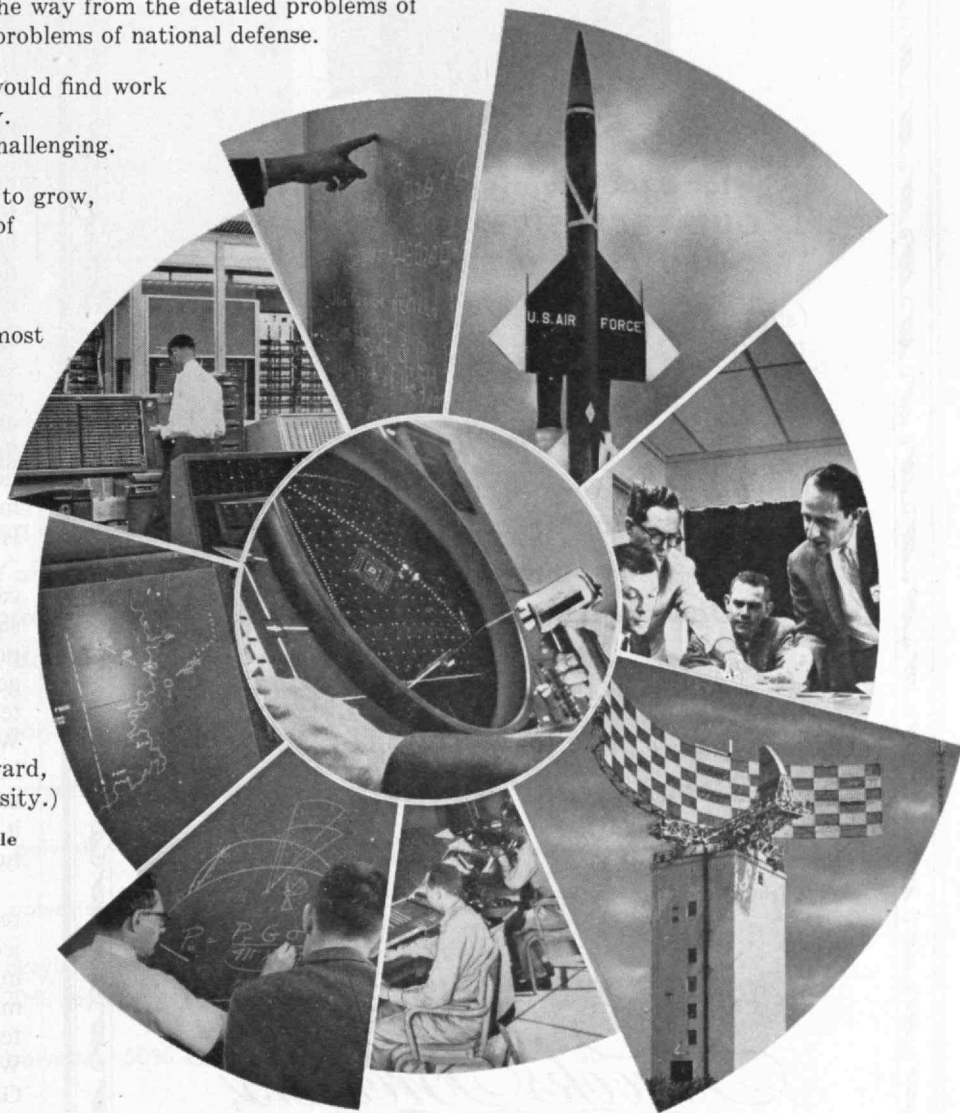
- Data Processing Development
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Human Response Equation

(Continued from page 30)

equation in automobile driving. Vehicles might be equipped with apparatus to flash lights when their drivers were insufficiently alert, or send radio warnings to traffic monitors. To develop effective equipment of this type, however, would require much more study of driver responses than has been undertaken to date.

The Slave Fingers

Human response becomes especially critical in remote manipulatory operations, i.e., in such tasks as handling components of a "hot" nuclear reactor, repairing mining machinery built to operate at the bottom of the sea, or assembling a way station in interstellar space. In all such tasks a human being must in effect extend his sense organs and muscles into a hazardous environment without entering it himself. The communication channel between him and his remote sensors and hands then can pose problems not encountered in such ordinary tasks as driving a car.

Such problems are being studied in the Engineering Projects Laboratory now under grants from the National Aeronautics and Space Administration and the Air Force. This is done with the help of a pair of "slave" aluminum fingers. These can be positioned on a plane or squeezed together in exact correspondence with a master set of fingers. The coupling between the master and the slave fingers is electrical. With a multi-channel tape recorder's help, delays can be introduced such as might occur because of the time it takes radio signals to travel between, say, the earth and the moon. §

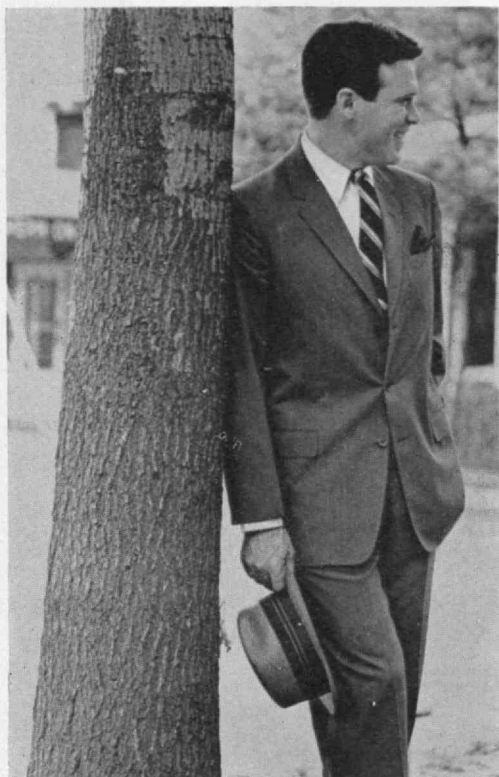
Transmission limitations in the remote manipulation of lunar objects might be overcome by endowing the remote sense organs and muscles with some autonomy and intelligence. Four graduate students, William R. Ferrell, '60, Donald L. Gray, Thomas L. De Fazio, '61, and John G. Kreifeldt, are currently examining both theoretical and experimental issues encountered in such man-machine systems. In collaboration with Dr. Lawrence Stark and

(Concluded on page 42)

§The terrestrial human operator of a lunar hand can't observe any of his own responses until after three seconds have elapsed.



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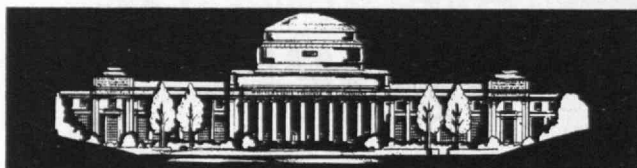
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Recently, the Instrumentation Laboratory was selected by NASA to develop the guidance navigation system for the moon space craft project, APOLLO.

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Human Response Equation

(Concluded from page 40)

the Neurology Section of the Electronics Systems Laboratory some experiments are also getting under way in which computers will be programmed to "watch" a man's manipulative behavior and take over certain elementary functions during the course of a manipulatory task.

Delays in the receipt of information will not be the only difference between simple earth-bound control systems and those that will be needed to exploit space. How, for example, might patterns of pressure exerted by a lunar object on a robot's hands be presented to a person on earth? Must the human operator of those hands in effect be able to "feel" with his eyes via closed-circuit TV?

The slave fingers in the M.I.T. laboratory are being equipped now with electrical contacts which, when metal objects are touched, cause a pattern of lights to be displayed for the benefit of a remote operator. But "remote feeling" with the skin may be more appropriate. Lester M. Saslow, '60, a graduate student, has recently completed a study in which he has shown that a simple geometric pattern can be presented to a person's skin by means of fine jets of air. Any such display method must be evaluated in terms of its effect on the stimulus response equation of a human, measured in the context of the remote task.

Both in such familiar tasks as driving an automobile and in the strange and challenging tasks of exploring beyond the earth, Norbert Wiener's well-known phrase, "the human use of human beings," can also be interpreted to mean "optimal engineering design." The proper allocation of roles to men and machines is clearly an engineering problem, provided the basic disciplines of physiology and psychology can be properly related to the engineering art, and provided the performance characteristics of man can be couched in useful quantitative theory.

DON'T FORGET, Alumni Day at the Institute on June 11 will feature presentations of many new educational techniques and concepts, and bring former students up to date on the Faculty's latest ventures.

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Trend of Affairs

(Continued from page 15)

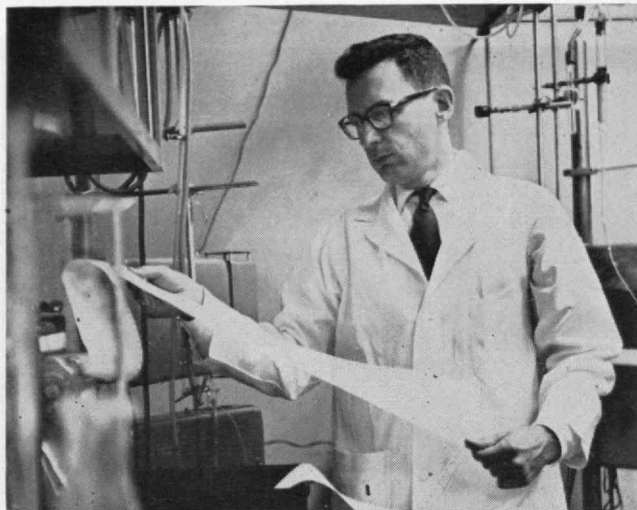
Naval Studies Centralized

A NEW Center of Naval Analyses has been established at the Franklin Institute in Philadelphia under a \$2,247,000 contract to provide technical management for the U.S. Navy's effort in operations analysis and long-range studies. Since World War II, operational analysis studies and advice have been provided by M.I.T. in Cambridge, and long-range studies have been made by the Institute for Defense Analyses in Washington. Both M.I.T. and IDA have co-operated in establishing the new center and working out the details with the Franklin Institute. Studies now being conducted by M.I.T. and IDA will continue without interruption during the phasing out from the two contracts now in force.

How Do Enzymes Operate?

THE NATIONAL Institutes of Health have granted a Research Career Award, carrying with it a "firm intention to continue federal support for the full career of the individual," to Elliott N. Shaw, '41, in recognition of his studies of enzymes in the human body. Dr. Shaw received his doctorate at M.I.T. when 23 and is now a professor of biochemistry at Tulane University in New Orleans. He was one of nine American scientists recently granted such awards.

"Enzymes," he explained to the press when he was honored, "are the tools with which our bodies perform their chemical reactions. . . . The ultimate goal of our



Dr. Shaw's biochemical work is assured federal support.

research is for science to be able to produce artificially the same result produced by normal enzyme activity. This would mean the perfection of new and better drugs, to substitute for enzyme activity that is lacking, or to slow down excessive enzyme activity.

"In the case of one genetic disease, for example, babies are born without a certain enzyme which removes excess of a single amino acid. This results in later brain damage brought about by this excess. If medical science could supply this enzyme which is missing, or a substitute for it, the baby could develop normally."

(Concluded on page 46)

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from **Strategy and Structure: Chapters in the History of the Industrial Enterprise**, By Alfred D. Chandler, Jr.

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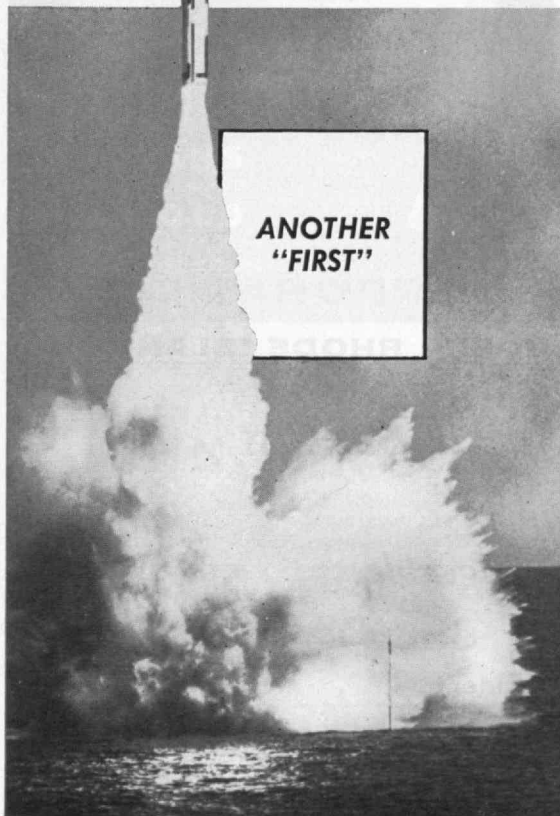
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Trend of Affairs

(Concluded from page 44)

Have You Seen These Books?

RECENT PUBLICATIONS especially likely to interest M.I.T. men include:

Manager Development: Principles and Perspectives, by George C. Houston, '27 (Richard D. Irwin, Inc., Homewood, Ill., \$9.35).

Thought and Language, by L. S. Vygotsky, translated by Eugenia Hanfmann and Gertrude Vakar, with an introduction by Jerome S. Bruner (The M.I.T. Press and John Wiley & Sons, Inc., \$4.95).

The Coming of the Age of Steel, by Theodore A. Wertime, with special acknowledgment to Institute Professor Cyril Stanley Smith, '26 (University of Chicago Press, \$6.95).

National Merit Scholarships

OF MORE THAN half a million high school students who took the National Merit Scholarship qualifying test last year, 945 were awarded four-year scholarships. Fifty-one of these young scholars are in the freshman class at M.I.T. The scholarship stipends, which range from \$100 to \$2500 (the average is \$847), can be used at any accredited college. The colleges themselves are commonly supported by grants because tuition does not cover the cost of educating a student. Merit scholars are now studying in more than 400 colleges and, with the exception of Harvard which ranks first, there are almost twice as many at M.I.T. as at any other school.

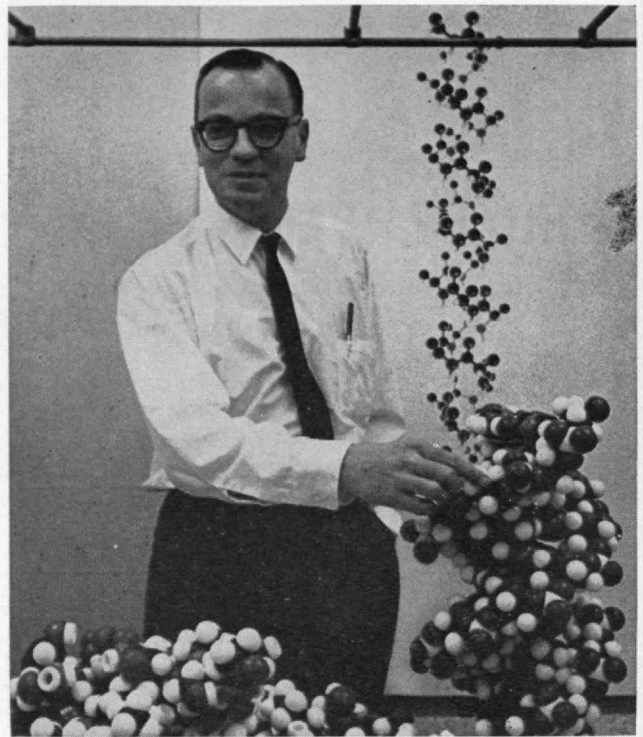


Photo from "Engineering and Science"

A NEW LABORATORY of electron microscopy has been established by Alan J. Hodge, '52, a former research associate at M.I.T., and other biologists now on the California Institute of Technology's faculty. Professor Hodge is pictured above with a model of the structure of the nucleic acid DNA magnified 125 million times which he uses.



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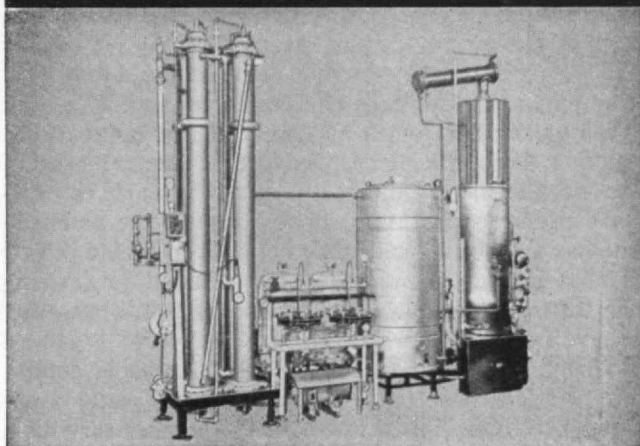


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in permanent revolution, and the sciences are like a big family sleeping in one bed: when the senior turns, they all turn.

"Physicists," he observed, "are not men of small mold. In Godlike grandeur they wish to create the world in mathematical language and say 'this is it.'" Repeatedly some physicists have foreseen the end of physics, but like Ole Man River, it has gone on rolling, rolling along.

The great system built by Newton suggested that all things are predetermined, and that if you knew enough and could solve the equations the future would hold no secrets. Even though a man falling out of an airplane could predict the instant at which the dull thud would come, the scientists thought "he could find the view interesting." But literary people accused the scientists of "not taking man's tragic fate tragically enough." Perhaps this, Professor Rabi suggested, was the origin of the division between scientific cultures and the rest.

But "physics is a body of knowledge made by humans and for humans." Newton "made" the particle in his physics, and now it has become "a little bit like a cake of soap in a bath: you move toward it and it moves away and you can't account for the motion."

The universe no longer appears to the physicist to be "running through a predestined course like a piece of clockwork in the sense that it is at all knowable to us." Nor can one say, as Marx supposed, that "the planned state has a philosophical background." Newtonian physics now appears not only to have violated "a certain sense of freedom which we feel in ourselves," but also to have been far too simplistic.

"To my mind," the lecturer said, "the whole enterprise of science is a part of a philosophical paradox of matter becoming conscious of itself. The necessary distinction between subject and object makes an embracing understanding inconceivable, but always insures that there will be more and more to learn . . .

"We are now in a position where we are moving very, very rapidly in a direction which cannot really be stated." Although the theories we have now have led to the atomic bomb and calculations of "most extraordinary properties of atoms, of nuclei, and of aggregations of atoms in the solid state," physics is not yet "intellectually satisfying." Its statements, Professor Rabi concluded, "should be taken very seriously but not as final."

THE DILEMMA of modern physics was the subject of Professor Rabi's final Compton lecture. In all six lectures, he emphasized the sociology and history of physics, and in this one he traced the rise of "the new breed" known as theoretical physicists.

The introduction of mathematical thinking, and the interplay between physics and mathematics in the last few centuries, he said, brought about one of the most brilliant chapters in the history of human thought. Mathematicians have begun lately, however, to look more closely at their own tools and to disdain those who cultivate branches of interest to physicists and engineers.

Physicists cannot get along without mathematics "and a lot of it," and now Professor Rabi fears "we are really developing a two-culture situation right inside physics." Possibly, he suggested, too many young people who might become excellent investigators are trying instead to emulate Einstein. The theoretical group is becoming larger and larger, and the theories more and more baroque, possibly because too few of the theorists have developed their ideas in close contact with reality.

It is now almost 30 years, he pointed out, since Yukawa's prediction of the meson gave a rough explanation of nuclear forces, and nothing of the sort has come along since. Much has happened in those years: "Wars and upheavals have occurred. Experimental discoveries never occurred at such a hectic pace, and the results are more and more fascinating. Theoretical or mathematical physicists have multiplied in number until they are almost more numerous than the experimenters whose results they feel it their mission to order. Our theoretical physicists are trained to the fineness of a race horse. . . . Conditions are ripe for great advances—the great synthesis that will enable us to assimilate the fantastic discoveries of recent years—but somehow enlightenment fails to appear."

We need more people trained in the Anglo-American tradition and willing to step into the laboratory, Professor Rabi concluded. Spare us, he said, from theorists with a language "so esoteric that nonsense isn't even funny" and conglomerations of experimenters who are really only technicians awaiting hints from manipulators of mathematical symbols. As in evolution, he warned, "overspecialization makes for efficiency, then it leads to stagnation, and finally to extinction."

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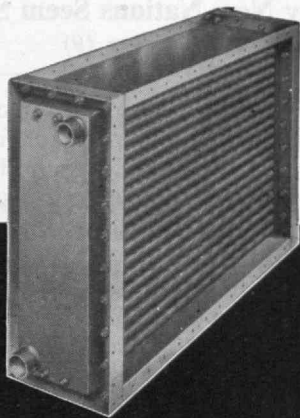
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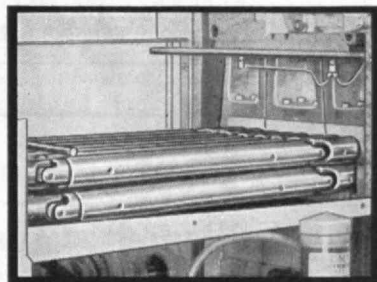
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Why New Nations Seem Strange

(Concluded from page 19)

mese politics. Once a threat or danger has been identified, the basic expectation is that since it probably cannot be effectively controlled, one can only hope that it will in time expend itself against others. Faced with a threat, the classic Burmese response is to avoid provocative actions and seek to become inconspicuous. . . . Deep in Burmese thinking is the belief that to have secrets is to be on the side of power. This view is consistent with Burmese feelings about nature and about the relationships of the supernatural to daily life."

The actions that follow from the use of power seem, to Western eyes, confusing and contradictory. The Burmese see the intention as more important than the deed, Pye explains, and this is linked to a belief that political action can have little influence over fundamental developments. By this logic, important matters must often be left alone. Rice, for example, which is of fundamental importance to the Burmese economy, is "too serious and too precious a matter to be tampered with." By similar logic, the idea of building a better world for tomorrow has little appeal.

Pye describes how politicians and administrators are recruited, the conflicting backgrounds from which they come, their contradictory goals and motivations, and the very difficult world of modernization and change with which they have to deal. Underlying all of this is the problem which is the subtitle of his book: "Burma's Search for Identity." What does it *mean* to be Burmese?

In an epilogue, Pye suggests a combination of two broad approaches to these problems of identity: a grand ideological solution by a charismatic leader, and assisting people to find a sense of identity through the mastery of demanding skills. "The historical irony of this age of nation building is that the overpowering thrust of nationalism forces people to rivet their attention on the nation as the unit of self-expression and to discount the worth of the individual, and yet the task of nation building calls for precisely the opposite orientation of stressing the individual in his social role."

A great need exists, according to Pye, for a much clearer conception of what kind of a world order we hope to create to replace the classical international system of the colonial era. Discussion of technical and economic matters is not enough. Basic to the idea of an evolving world culture is the democratic ideal which "illuminates the links between politics, personality, and nation building."

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Club News

Washington, D.C. Club Hears Robert E. Wilson

The executive committee held a meeting in January to plan the remainder of the events for this year and to review the rough draft of the new by-laws of the club. We were very fortunate in being able to have Robert E. Wilson, '16, Commissioner, U.S. Atomic Energy Commission, speak to us at the dinner meeting on February 27. Dr. Wilson discussed the many facets of the work done by the AEC. Most naturally, the weapons development function receives the greatest amount of publicity although the peaceful applications of atomic energy are still considered to be of vast importance to the future of mankind. The use of atomic energy for central station power is expected to be competitive with present fuel systems by 1968 in certain areas of the country. The atomic energy industry has achieved a particularly high safety record despite the natural hazards involved. Dr. Wilson explained some of the tremendous developments in the use of radio isotopes, especially in medical therapy. Probably the least known function of the AEC is the financing of research programs at universities and laboratories in nuclear engineering, biology and metallurgy. The AEC is in continuous co-operation with industry to further the developments of the entire field of atomic energy. We were all extremely interested in Dr. Wilson's remarks. Several questions were raised by members. Dr. Wilson's answers indicated the enormous experience and knowledge he has in business and engineering.—Gilbert H. Lewis, '51, Secretary, 9914 Grayson Avenue, Silver Spring, Md.

Happy Birthday

Congratulations are due in May for two Alumni about to celebrate their 90th birthdays; and those about to turn 85 and 80, as listed below:

May, 1872—CHARLES W. BERRY, '95, on the 21st; and CHARLES G. ABBOT, '94, on the 31st.

May, 1877—GEORGE C. GLOVER, '99, on the 3rd; HARRY K. WHITE, '99, on the 12th; GEORGE H. PRIEST, '99, on the 16th; RAYNOR H. ALLEN, '09, on the 17th; and W. CORNELL APPLETON, '01, on the 21st.

May, 1882—FREDERIC A. FENGER, '09, and CHARLES G. MIXTER, '02, on the 1st; ROBERT J. ROSS, '06, and WINFRED A. TAYLOR, '05, on the 2nd; JAMES S. MAC-GREGOR, '06, on the 7th; BERTRAND L. JOHNSON, '05, on the 11th; CAREY A. WALBRIDGE, '09, on the 14th; T. HERBERT FILES, '05, on the 17th; CARLTON H. MANTER, '05, on the 18th; RALPH O. INGRAM, '04, on the 21st; FRANK A. BENHAM, '06, on the 23rd; CHARLES J. GRIFFIN, '04, on the 25th; and WALTER E. CALDWELL, '08, on the 30th.

Long Island Club Will Have U.N. Speaker

On Friday, May 11, the M.I.T. Club of Long Island will hold its annual dinner at the Huntington Town House. Highlight of the evening will be a talk by Orhan Barim, Turkish engineer and Economic Affairs Officer at the United Nations. Mr. Barim will discuss "Technology and its Effects on Underdeveloped Nations." Arma Division of American Bosch Arma Corporation, Kollsman Instrument Corporation and Republic Aviation Corporation will sponsor the cocktail hour, Event Chairmen Mike Cantor, '39, and Doug Tooley, '28, report.

The club will then wind up this highly successful season on a lighter note early in June with a father and son, outing to West Point via the Hudson River Day Line. Event Chairmen, Warren Obes, '49, and Bob Franklin, '34, are working on plans for this pleasant and educational trip. Interested Long Island Alumni can obtain further information through the M.I.T. Club of New York or by contacting Myron A. Cantor, '39, President, 11 Sugar Tom's Road, East Norwich, L. I.—Theodore W. Henning, '46, Secretary, 24 Madison Park Gardens, Port Washington, L. I., N.Y.

Central Pennsylvania Club Weighs Educational Objectives

On Monday, November 13, 1961, the M.I.T. Club of Central Pennsylvania had its fall dinner meeting at the Capitol Motel-Restaurant in east Harrisburg. Club members, their wives and guests enjoyed an outstanding speaker, Dr. Charles H. Boehm, Superintendent of Public Instruction for the Commonwealth of Pennsylvania, who spoke on educational objectives for the decade of the Sixties. Dr. Boehm's talk was followed by a question and answer period and from the number of questions which were asked, the meeting was a terrific success.

Please write your secretary if you have any news which you feel would be of interest to the Central Pennsylvania Alumni of the Institute.—Robert K. Peterson, '48, Secretary, 566 Brentwater Road, Camp Hill, Pa.

Mexico Club Meets New Ambassador

On Wednesday, February 14, the M.I.T. Club of Mexico joined with alumni clubs of other U.S. universities in a reception for the newly appointed U.S. Ambassador, Thomas C. Mann.

The reception was held at the University Club, and over cocktails we had an opportunity to chat informally with the Ambassador and renew acquaintances with Mexico City Alumni.

M.I.T. Alumni and their wives included Alvino Manzanilla-Arce, '31, President; Hipolito Paul Gerard, '55, Walter J. Nock, '28, George D. Camp, '16, Thomas M. Nevin, '24, Agustin Valdez, '25, Charles W. Davis, '49, James J. Rattray, '48, and Salvador Madero, Jr., '29.—James J. Rattray, '48, Secretary, Monte Everest 905, Mexico 10, D.F.

Northern New Jersey Club Plans Annual Dinner

The officers elected for 1961-1962 are: Henry G. McGrath, Jr., '36, President; John M. D. Walch, '48, Vice-president; James L. Vaughan, '36, Vice-president for Programs; Howard E. Milius, '38, Secretary; Joseph Wenick, '21, Treasurer. Board Members of the club are serving on committees which at present include: Educational Council, Stuart G. Stearns, '39; Finance, Joseph Wenick, '21, and James J. Shyne, '43; Membership, John P. Wall, '50; Placement, Paul E. Hoffman, Jr., '56; Program, James L. Vaughan, '36, and Roy F. Thorpe, '58; Publicity, Donald G. Espey, '47; Reception, John M. D. Walch, '48, and Donald A. Peterson, '57; Scholarship, Newton S. Foster, '28.

Because of the National Alumni Night meeting held on October 19, 1961, the club's first meeting of the 1961-1962 season was delayed until November 2, at which time Hans Mueller, Professor of Physics at M.I.T., was the guest speaker. The second meeting, held on January 18, was addressed by Richard S. Morse, '33, former Assistant Secretary of the Army. On March 20 Dr. Ralph Landau, '41, Executive Vice-president of the Scientific Design Company, spoke to the club. Dr. Landau received his doctor of science degree in chemical engineering from M.I.T. and has an international reputation in the field of designing and building chemical plants and in the development of chemical processes.

All members are looking forward to the Annual Dinner Meeting and Ladies Night planned for May 8, 1962. Professor Emeritus Warren K. Lewis, '05, "father" of modern chemical engineering, is the featured speaker. This meeting will be one of the highlights of the season.

The number of active members for 1961-1962 has shown an increase over the previous year. An intensive campaign was undertaken this year to attract recent graduates as well as to stimulate the interest of all Alumni in participating in club activities. Future programs are being designed with this goal in mind.—Howard E. Milius, '38, Secretary, 9 Tuxedo Place, Cranford, N.J.; Philip E. Sperling, '52, Assistant Secretary, 43 Lewis Street, Cranford, N.J.

Chamberlains Visit Great Britain Club

The M.I.T. Club of Great Britain entertained Mr. and Mrs. Eugene R. Chamberlain on December 11, 1961, following the couple's tour of Egypt and the Middle East. Mr. Chamberlain, Director of Advanced Placement at M.I.T., had been discussing the qualities expected of a candidate for admission to M.I.T. with the educators in those countries. Mr. Chamberlain not only spoke of his trip and the interesting people and places he and Mrs. Chamberlain had seen, but also gave the club up to date news of the Institute. Twenty-five members of the club attended the meeting presided over by David N. Truscott, '35, President.—Arthur S. D. Barrett, '39, Secretary, The Coach House, Park Hill Road, Shortlands, Kent.

Class News

'91

Do you remember the small group of girls who entered M.I.T. with us in the fall of 1887? One of them, **Mrs. Thomas B. Carpenter** (nee **Ann Elizabeth White**), is now living at 516 Ashland Avenue, Buffalo, N.Y. The following is from her daughter Charlotte, who is a teacher in the Buffalo School system. If you can read this letter without a lift of the spirit, you are different from me.

"Dear Mr. Brown: When I saw the handwriting on your envelope, I was delighted to think that we were getting a letter from you. Thank you so much for writing us the news of the Class of 1891 and congratulations to you on the 70th annual meeting of the class. Indeed you should be pleased about that. You put me to shame: I managed to get to the first meeting of my class—Vassar, 1922—and have never been to another! I wonder if I will make it to our 70th? I'd like to. Yes, we are comfortable at our house. I read your letter to my mother and she seemed very pleased to receive it. Things are going along here very much as usual. Things don't seem to change here very much. The only fly in the ointment is what I feel as a terrible lack of time. This comes from trying to take care of a house and work too. I notice that some people seem able to swing it, but they amaze me. Thank you so much for your letter. Believe me, it meant a great deal both to my mother and me. The very best of good wishes to you and to the Class of '91 from my mother and me. With warmest appreciation, very sincerely, Charlotte Carpenter."—**William Channing Brown**, Secretary, 15 Forest Avenue, Hastings-on-Hudson, N.Y.

'95

We appreciate the kindness of George D. Whittle, '08, a friend of Francis Farquhar, brother of our Robert E., in sending us a February 24 news clipping from the California Berkeley Daily Gazette with a fine picture of Robert putting on the golf green: "Berkeley Architect—At 90, He drives Own Car, Cooks, and Putts. Happiness, plain and simple, seems to be the thing that today put Robert Farquhar into his 91st year with good health, splendid spirits and a remarkable memory that allows him to return to 'wondrous days of yore.' Those days, and the reliving of them, have given Farquhar a manner of constant gratefulness for living. Robert Farquhar, entering his 91st year today, is a Berkeley resident and world renowned architect who doesn't live in the past. He just

savors it while very much in the present. Farquhar has lived here for 10 years in the home of his brother, Francis, retired account executive and historian, and his sister-in-law, noted mountaineer. Although he's an avid no-starch dieter and a believer in daily exercise, Farquhar attributes his longevity to good times gone by.

"Farquhar was brought up in Boston, son of a building executive. After graduating from Harvard College, Phillips Exeter Academy and the Massachusetts Institute of Technology, he went for five years to the Ecole des Beaux Arts in Paris. A sportsman of various tastes, Farquhar played rugby on the French team, took honors for France in the broad jump and high jump and was a member of the French Touring Club. Farquhar returned to France during the first world war with the American Red Cross. He was awarded the Croix de Guerre and, Farquhar recalls, a 'helmet upstairs with a bullet hole in it.' In 1932 he hosted a French athletic team in this country as liaison officer at the Los Angeles Olympics. For this he was awarded the decoration of the Legion of Honor.

"In the first years of this century Farquhar married the daughter of Senator P. Jones of Nevada and settled in Los Angeles, where he raised three sons and spent more than 40 years as an architect. He designed the W. A. Clark Library, donated by will to the University of California, The California Club, the Festival Hall of the Panama Pacific International Exposition, the Library of the University of Nevada, the mausoleum of W. A. Clark, Jr., in Hollywood Cemetery, and Beverly Hills High School. Farquhar was one of a selected team of nationwide architects who designed the Pentagon. 'I had nothing to do with the interior,' Farquhar is quick to add. Ten years ago, in moving here to retire in the rustic yet splendid setting of his brother's home in the Berkeley Hills, Farquhar performed his last architectural assignment. He created a library for his brother Francis, historian of regional Americana and naturalist writer, in the basement of the Farquhar home.

"Farquhar's delights now are his record collection of classical music, his memories

of a happy life and pleasantries of leisure. He arises early, cooks his own breakfast, reads the paper and plays the piano. He is reviving his skill in reading French by returning again to such writers as Hugo and Rolland. The retired architect has just bought a new car, which he drives himself. About thrice weekly he goes putting on a nearby green with two or three pals. He stopped playing golf and confined himself to putting after two accidents several years ago, neither of which were age-induced. In one, a car rolled on him, breaking some bones. Until last year, Farquhar went alone regularly to the San Francisco Symphony, joining the bus expeditions that included luncheon junkets. 'Twenty-five women and me,' remembers Farquhar. Now he goes with his sister-in-law. Farquhar seems not at all preoccupied with his age, or even very conscious of it. His days are gently spent, enriched with memories of an American in Paris and an architect in America."—**Andrew D. Fuller**, Assistant Secretary, 120 Tremont Street, Boston.

'96

Colonel **William H. Clifford**, former Portlander and retired Army Officer, died January 24 in Washington, D.C. He attended Portland Latin and Chauncey Hall Schools, before entering M.I.T. with our class. He was reading law in Portland when the U.S.S. Maine was sunk in Havana Harbor. He was commissioned in the Naval Reserves and served on the monitor Montauk when it was towed to Portland as quarters for the reserves. Later he was transferred to the Rainbow and saw service in the Caribbean. After the war he was commissioned in the Marines. He served three years in the Philippines, at Zamboanga, Southern Mindanao, then was transferred to China where he was in the march from Tientsin to Peking. Later as captain he commanded the Embassy Guard at Peking. On his return to the United States he became engaged to Mabel Moore. Major Clifford was again ordered to the Philippines; on his way he stopped in London and there was married to Miss Moore on

Deceased

SAMUEL C. PRESCOTT, '94, Jan. 19
WILLIAM H. CLIFFORD, '96, Jan. 24*
JOHN P. ILSLEY, '97, Jan. 27*
GILBERT H. PRATT, '97, Jan. 2
ERNEST A. BRAGG, '98, Aug., 1961
CHARLES H. DEERING, '99, Feb. 11*
DAVID H. COWELL, '01, Feb. 15*
HARRY E. DART, '01, Feb. 21*
JAMES DRISCOLL, '02, Jan. 20, 1961
BEN E. LINDSLY, '05, March 2*
ROY F. LOVEJOY, '05, March 9*
MARY E. WARREN, '05, March 6*
SIMEON C. ALLEN, '06, Feb. 20*
HARRY A. RAPELYE, '08, Feb. 20*
EARL R. HAMILTON, '09, Jan. 15*
HAROLD L. LANG, '09, Dec. 6*
RICHARD W. CUSHING, '11, Nov. 17*
EDWARD MONTGOMERY, '12*
LEON L. KATZENSTEIN, '13, Jan. 30*
HENRY T. CHANDLER, '14, July 19, 1960*

BENJAMIN C. CROMWELL, '14, Feb. 5*
RICHARD M. FIELD, '15, Sept. 17*
PARK D. MANBECK, '15, June 6, 1960
WILLIAM A. LIDDELL, '16, Feb. 8
CARL A. BORLAND, '17, March 31, 1961
FRANKLIN M. DAVIS, '17*
BERTRAND H. SOUTHWICK, '19, Jan. 25
SAMUEL H. BURR, '20, Dec. 16*
ALEXANDER E. HALBERSTADT, '21, Feb. 23*
BERNARD H. MORAN, '21, Feb. 17*
EVERETT R. TUCKER, '21, Jan. 22*
FRANCIS B. STEWART, '24, Nov. 27*
WILLIAM J. MURPHY, '26, Nov. 23
JOSE FERRER, Jr., '29, Feb. 13*
ROBERT M. SNYDER, '31, Feb. 15
WALTER L. GUZEWICZ, '32, Feb. 11
WILLIAM B. O'BRIEN, '34*
RICHARD L. McMANUS, '45, Jan. 18*
GERARD L. HARTSTEIN, '51, March 2

* Further information in Class News.

October 12, 1907. He resigned from the service and bought a farm in Loudoun County, Va., and raised beef cattle. At the outbreak of World War I, unable to get active duty in the Marines, he transferred to the Army and was sent overseas with the 80th Division with the rank of colonel. He was invalided home toward the end of the war.

He was former chairman of the Red Cross and president of the hospital at Leesburg, Va. He was a lifelong Democrat. He is survived by his widow, Mabel Moore Clifford, and his sons Lieutenant Colonel William H. Clifford, Jr., and Captain George M. Clifford and a grandson, George M. Clifford, Jr. He was buried in the Arlington National Cemetery. This account came from the Press-Herald of Portland, Maine. The sympathy of the class was expressed in a letter to the widow.

Jack Eynon's eye operation was quite successful and he is now at a rest home recuperating; he still has his auto and hopes to be able to drive it again over limited areas at very conservative speeds.

... **Mrs. Henry A. Waterman** has sent her husband's M.I.T. pin, which he often wore. "Perhaps you will know someone to whom to give it." "Conflict of Interest" is the heading of the Massachusetts newspaper articles, since the notorious film "Biography of a Bookie Joint" was shown everywhere but in Boston; so I can't keep it or give it to my son, Michael, '41. Yarmouth's weather is modified by the Gulf Stream and green is now, in early March, beginning to show in Mrs. Waterman's lawn. ... Mexico has more appeal to one who has spent this winter here in New England; the fiesta of the Tech Club began March 15. Lobby will have an account of it, since he always goes. On the same day the M.I.T. Club of Boston had its luncheon at the Old Union Oyster House, which is unchanged from our student days. There was another in April.—**James M. Driscoll**, Secretary, 129 Walnut Street, Brookline, Mass.; **Henry R. Hedge**, Assistant Secretary, 105 Rockwood Street, Brookline, Mass.

'97

We quote from the Quincy, Mass., Patriot-Ledger account of the life of our secretary, **John P. Ilsley**, who died suddenly of heart failure on January 27. "Born in Germantown, Pa., Mr. Ilsley lived in Milton for 45 years. He was an investment counselor for Eaton and Howard, Inc. of Boston from 1929-1953. Mr. Ilsley was graduated from the Massachusetts Institute of Technology in 1897 with a major in mechanical engineering. He was formerly associated with the heavy machinery tool business in New York City and Hyde Park and also was a New England field representative for the Solvay Process Company of Syracuse, N.Y. Mr. Ilsley was the first president of the Milton Taxpayers Association and chairman of the Milton Warrant Committee. During World War II he served in the tool division of the War Production Board.

"He was a member of the Union Club of Boston, St. Anthony's Club of New York City, the Milton Hoosic Club and a former member of the American Society of Engineers. Mr. Ilsley is survived by his wife, Mrs. Annie D. (Alexander) Ilsley; a daughter, Mrs. William H. Farnham of Milton, and four grandchildren and one great-grandchild." ... The members of the Class of '97 will always have fond memories of our fine class secretary, Jack Ilsley.

We remnants of '97, having lost our beloved secretary-treasurer, and having our assistant secretary, **Jere Daniell**, too ill to take up his duties, we need badly a volunteer secretary-treasurer. The writer, the class agent, being the only remaining class official, has assumed temporary chairmanship of a committee of the whole class to obtain another secretary-treasurer. Accordingly, a letter was sent out a month ago to the 22 members who have expressed interest in class activities in the last few years, asking for a volunteer for the office. The result has been disappointing. The total replies or acknowledgments have numbered only nine. One of these, "**Gilly Pratt**", it is sad to relate, died in January.

No one has volunteered for the secretaryship. Until such time as a secretary is selected, the writer will attempt to carry out the duties of that office in spite of what you will suffer therefrom. If you do not like it, please get busy and find a secretary-treasurer. ... We should have a 65th gathering in Boston in June. Won't you please write as to your desire for such and the probability of your being there? The writer can't "reunion" all by himself. Alumni Day, June 11, is for you!

The following letter from **Frederick C. Gilbert**, officially '98, was forwarded to us by Mrs. Ilsley: "This is in reference to your Class News in the January and February Technology Review recalling the early days of the Class of '97. I was in your class for three years, dropping out to come back to graduate with the Class of '98 (Course V). Naturally, I knew more men of '97 than '98 but have been listed with the latter class. I was present at that first meeting of '97 and your comments on the rather rough time (given us by the sophomores) recalled those long ago years when we were all so fresh and green! I also well remember **Roger Hossford**, the temporary chairman. You and the class may not have known that Roger spent some weeks with me at Pueblo, Colo., when I was chemist at the Eilers Plant of the A.S. & R.C. He was sent there by Franklin Ginterman, General Manager, from Denver. Mr. Ginterman, by the way, was fond of M.I.T. and started a number of graduates on their way, including Russell P. Raynolds, Edwin K. Chase (both '06), and Milton H. Kauffman, '91. At any rate, one day Roger failed to report at the laboratory, and it was not until the report of his decease that I knew what became of him. I am not sure whether he notified Mr. Ginterman as to his reasons for not going on with the assignment. Thank you for your nostalgic references to those, shall we say, salad years. Sincerely, Fred C. Gilbert."—**George R. Wadleigh**, Class

Agent, 70 Flower Avenue, Hastings-on-Hudson, N.Y.

'99

Charles H. Deering, V, 86, died February 11, 1962, in Portland, Maine, after a brief illness. He was born in Saco, Maine, March 4, 1875, son of John M. and Amelia Harmon Deering. From December 2, 1907, he worked for the U.S. Customs Department in Portland until his retirement on March 1, 1943, when he was acting deputy collector of the port. Charles was a director emeritus of the Deering Savings and Loan Association, which he served for 42 years; a member of the First Universalist Church; a life member of the Charitable Mechanics Association; and a former member of the Portland, East Deering and Woodford Clubs. He leaves a daughter, Mrs. Edith D. LaDow, Portland; a granddaughter, Mrs. Barbara D. Adlard, Springfield, Vt.; two sisters, Miss Mary A. Deering of Saco and Mrs. Fred Campbell of Kennebunkport; and three nieces. ... The Review's "Happy Birthday" monthly list reminds us that the average age of '99 is 85.—**Percy W. Witherell**, Secretary, 84 Prince Street, Jamaica Plain, Mass.

'01

I have first to report the deaths of two more of our classmates. **David H. Cowell**, VI, of Hingham, Mass., died on February 15 at 84. He was an electrical engineer for the New Haven Railroad before he retired in 1943. A native of Dorchester, he was graduated from the Mechanics Arts High School in Boston in 1897 and attended M.I.T. with the class of 1901. ... **Harry E. Dart**, VI, died at Mattituck, L.I., on February 21, aged 83. He was retired assistant secretary of the Hartford Steam Boiler Inspection and Insurance Company and had resided on Long Island for nine years. Surviving is his wife. ... The older we grow the faster our classmates slip away. We miss them. ... **Anthony W. Peters**, I, of Westwood, Mass., writes: "If there are any other 'Ancient Mariners' left in the class, the following item may interest them. Last summer the Friendship Sloop Association of Friendship, Maine, held a race for keel boats 25-35-foot, gaff-rigged, with ballast inboard. Eighteen boats took part—14 oldtimers and 4 replicas. It was a big day for all. From 1890 to 1920, 500 of these sloops were built for the Maine fishermen. When the gasoline motor put these boats out of style, the summer people picked them up for pleasure boats. Now the Society is trying to revive interest in them as seaworthy cruisers. Having pulled in many a cod and haddock over the side of one of these boats, I decided to build a scale model of a 25-footer. It has been an interesting job and has kept me busy all summer and fall. My friends say she is a beautiful boat."

Roland E. Simonds, II, Winchester, Mass., reports: "Am getting along in years

(84 on July 4 this year) the same as the rest of the class. Have been retired for 12 years and can still find plenty to do around my place. Have been bothered with arthritis in my knee for several years. Last winter it spread to my spine, and I was unable to get out for several months. This past summer it improved, and I was able to work in my gardens and yard. We have about one-third acre of land and several flower gardens which I enjoy. My only outside work is in the church; I was treasurer of the building fund for a new addition for five years. I am still on the Official Board of the Church and serve as coffeemaker for many social functions. I retired last year from the Winchester Auxiliary Fire Department after serving 20 years. So far this winter I have been pretty well and able to get out daily but do not do much walking. Sorry to have missed the reunion but was unable to attend. I enjoy reading the *Class News in The Review*. . . . So far class replies are coming in fairly well but I need many more if the class news is to keep up.—**Theodore H. Taft**, Secretary, Box 124, Jaffrey, N.H.

'02

A copy of the program for our 60th Reunion should now be in the hands of all who have expressed interest in the affair. The reunion will be held June 8, 9, and 10, the weekend preceding Alumni Day with headquarters at the Burton House on campus and at the University Club in the Back Bay. It is hoped that those unable to get around to the weekend events will come and join us on Alumni Day, June 11. An attendance of about 25 is indicated. This figure includes wives and guests.—**Burton G. Philbrick**, Secretary, 18 Ocean Avenue, Salem, Mass.

'04

In the absence of any item of news we turn our thoughts to the past. Some of you who may not have toured Boston since student days may be interested in the radical changes which have taken place in Copley Square and vicinity since you were there. Trinity Church remains at the eastern side of the square outwardly the same but nearly a million dollars was recently spent in renovating and modernizing the interior. On the western side of the square the Public Library remains also outwardly unchanged but the former Harvard Medical building adjoining it has been purchased by the library trustees and will be replaced by an addition. Across Boylston Street from the library the Old South Church building still stands but the leaning tower which you may recall was torn down some years ago and rebuilt on a new foundation. Aside from the above buildings little remains as it was before 1904. The Museum of Fine Arts building which occupied the south side of the square was replaced by the Copley Plaza

Hotel (now Sheraton Plaza). The Second Church building and most of its neighbors on the north side of the square have been replaced by new or completely renovated commercial buildings. The latest is an ultramodern office building at the corner of Dartmouth Street and a similar building is under construction at the corner of Clarendon Street. You may recall the popular drugstore formerly occupying the corner. The new building of the New England Life Insurance Company which replaced Rogers and Walker has lost some of its architectural beauty by an extensive addition which leaves it a rectangular block of granite. The Hotel Brunswick (including "chapel") was replaced a few years ago by a modern office building and the entire block directly opposite the former Rogers building has completely changed since 1904. The area formerly occupied by Engineering A, B and C and Lowell is now occupied by the University Club and various commercial buildings. The Hotel Westminster which had just been built in our student days has been torn down and the lot used as a parking space. Some day when you figuratively sit in the sun on Rogers Steps you can try to visualize how things have changed in the 50 odd years. Why not decide to attend the functions of Alumni Day June 11 and see the changes for yourself?—**Carle R. Hayward**, Secretary, Room 35-304, M.I.T., Cambridge, Mass.; **Eugene H. Russell, Jr.**, Treasurer, 83 Devonshire Street, Boston, Mass.

'05

Apparently **Gib Tower** has been cleaning out his attic, for I received recently a package containing many souvenirs of the old days at Tech on Boylston Street. The Tech, dated June 5, 1905, gave in detail the story of Class Day and Commencement, photos of class officers, marshals, speakers, etc. (Six out of eight of the officers have already passed on.) There were also newspaper write ups of "The Scientific King" in which many of our class took prominent parts—Ros Davis, Joe Daniels, Tom Estabrook, Zeke Coffin, F. M. Blount, etc. Another newspaper clipping tells of the battle between Tech Boys and Conductor Adamowski at the Pops Concert in 1903. A wine list from the program of the same Pops Concert, shows that you could buy a pint of the best imported clarets, etc., for 50 cents. It would be interesting if we could all explore an exhibit of some of these 55- or 60-year old souvenirs. I have quite a collection of clippings from Boston papers telling of the police riot, also a piece from an illuminated banner carried in that parade and saying "to ——— with Harvard." Too bad there's no '05 Hall of Fame in which these souvenirs could be enshrined.

I hope that all members of the class are as appreciative as I am of the work of **Bob McLean**, our class agent, in helping keep the '05 record up in the Alumni fund drives. Of course the total amount given by the class is important, but Bob

is also stressing the importance of the number giving. Some of us cannot respond today as we once could, but please help Bob show a high percentage of the class giving. Through Bob I received the news that **C. Robert Adams** "is very well mentally and physically. He plays golf twice a week and loves to dance. He weighs 155 pounds and looks very young. He celebrated his 49th wedding anniversary during the week of Feb. 17." This may be a boost for the good life in California. . . . Also from California (Berkeley) comes a clipping with picture covering an exhibit "Geometry in Art," the work of retired Army Colonel **Robert S. Beard**. "About 50 drawings and cardboard models which Beard has constructed as a hobby are in the exhibit sponsored by the college mathematics department. Beard said he hopes that viewing the exhibit will interest young people in studying geometry. A graduate of Massachusetts Institute of Technology, Beard has exhibited his work at Columbia University, University of Manitoba in Canada, and many other colleges in North America." . . . **Fred Poole** writes from Florida that his wife Dorothy took the first blue ribbon prize for her exhibit of Florida fossils at the Sanibel Annual Shell Fair, March 1-3. . . . New address for **Charles E. Smart** is The Crossway, East Acres, Troy, N. Y.

The question, "What about a 57th Reunion?" has been raised twice. I had felt after talking with some of the old reliable Cape Cod weekend reunioners that it is foolish for us to try another Cape Cod weekender, at least until our 60th. We have been so successful both in quality and quantity at the luncheon, dinner and Pops Concert on Alumni Day that I had felt that this is just about our maximum effort. We could have a weekend reunion in Cambridge, perhaps using some of the Institute's housing facilities. You will read this on the first of May. Anyone feeling that we should do more during an off-year may offer specific suggestions with an offer to take charge of arrangements. It's difficult doing this from a point 100 miles from Boston.

The rest of the news is much more somber in nature. **Ben E. Lindsly** died very suddenly on March 2, 1962. I had no idea Ben was even poorly. Apparently none of his family foresaw the early end. I quote from the Washington Post, sent me by **Bertrand L. Johnson**, "Ben E. Lindsly, a retired Securities and Exchange Commission unit chief, died Friday after a heart attack at his home, 300 Poplar Drive, Falls Church. He was 79. He was born in St. Louis, earned a mining engineering degree from Massachusetts Institute of Technology in 1905 and then worked for various mining firms in the western United States. He entered government service in 1924 and served for 10 years as senior petroleum engineer and assistant superintendent of the Bureau of Mines' petroleum experimental station in Bartlesville, Okla. From 1934 to 1936, Mr. Lindsly was with the Petroleum Administrative Board here and served as senior petroleum engineer for the S.E.C. until 1943. He was then named chief of the oil and gas unit of

the S.E.C., a post he held until his retirement 10 years later. Mr. Lindsay is survived by his wife, Lesley, a daughter, Martha Dobey, of 4442 Vacation Lane, Arlington, and a son, Robert R. Lindsay, of Bartlesville." . . . **Roy E. Lovejoy, IX**, died at his home in Lowell, Mass., on March 9, 1962. His wife, Andrea, phoned me almost immediately, and Ruth and I, since it was absolutely impossible to be away on the day of the funeral, drove down for a call. Roy had been aging since his operation in the fall of 1960, but there was no evidence of an immediate fatality. He had come down fully dressed that morning, sat at the breakfast table and while Andrea had gone to the kitchen, he dropped, dying instantly. We tried to express the sympathy of the class, as Roy and Andrea were always the most faithful and eager sponsors of our Cape Cod reunions. Roy was the last survivor of Course IX. . . . **Miss Mary Eva Warren** died March 6, 1962, at her home in Weston, Mass. Apparently at 94 she was the oldest living member of the Class of 1905. She took courses in biology at M.I.T. for 3 years. She graduated from the Framingham Normal School, and taught school for approximately 50 years in Weston, Waltham, Newton and Somerville.—**Fred W. Goldthwait**, Secretary and Treasurer, Center Sandwich, N. H.; **Gilbert S. Tower**, Assistant Secretary and Treasurer, 35 North Main Street, Cohasset, Mass.

'06

Early in March came a progress report from one of the members of the Travelers Club. **George R. Guernsey, I**, wrote from Banning, Calif., where he and Elsie arrived February 26 after their stay in Phoenix. They had holed in for some weeks in a very comfortable apartment and, though it had been rainy and cold for awhile, George had played his first game of golf, fruit trees were beginning to blossom and flowers were in bloom. They had had several trips round-about with the Roy H. Allens, '05, and he was evidently much impressed by the scenery—"Very beautiful in the San Geronio pass between two mountains (snow capped) over 11,000-foot elevation." George and Roy had known each other during school days in Winchester. While they were in Phoenix, **Guy H. Ruggles, III**, invited George to the luncheon meeting of the M.I.T. Club on February 14, and with **Harold C. Plummer, III**, present too, '06 was well represented. It usually is, with **Charlie Willis, III**, making the threesome. Guy had previously taken George along to visit Harold whose housekeeper, Mrs. Hicks, had "set up a very nice lunch for us. It was an enjoyable occasion and lasted some four hours." Along in March the Guernseys planned to move north so probably by now they have visited the Century 21 Exposition, the Seattle World's Fair, and have dined in the revolving restaurant at the 500-foot level of the Space Needle, which soars 600 feet above the foundation 30 feet in the ground. See you in June,

George and Elsie, at Alumni Day? And who else will turn up then?

Guy Ruggles also wrote to tell about their get-togethers and his call at Elsie's brother's where they were staying. He had spent Christmas again with his married daughter and four grandchildren at Mountain Home, Idaho, where the son-in-law, Captain Donald J. Crowley, is stationed at the air base. In telling about the Phoenix Club luncheon at Ranch House Inn, Guy said they had another visitor, Lewis S. Southwick, VI, '10, who was staying in Scottsdale awhile. "I like this luncheon. There are at least 100 in the valley who might come, and also visitors who are sometimes hard to locate or contact." Guy laments: "When I left Cananea I came from an eight-room house and three servants plus to a three-room house and no servants minus. In Cananea I had two offices with plenty of clerical help while here I haven't even a desk, and haven't unpacked but 5 per cent of my library." Even so, Guy fills one side of his 8 x 11 typed letter and the other side longhand—bless him! . . . In the notes in the January, '58 Review we included some of the career of **Simeon Carlyle Allen, V**. Dr. Allen died February 20 at the New England Medical Center in his 76th year. Born in Boston, he prepared at English High School, entered with us and was graduated in chemistry, having been a member of the Chemical Society in his junior year. His thesis was "An Attempt to Determine Small Quantities of Benzoic Acid." After 15 years or more in the food and drug industry in New York state, he decided he wanted to enter the medical profession, was turned down by Harvard (too old at 38), then entered Tufts Medical and received his degree in 1927. The following year he did postgraduate work at the University of Vienna and worked with Dr. Sigmund Freud. Quoting from the Boston Evening Globe: "He carried on extensive research in dermatology, cancer, arthritis, geriatrics, and food packaging. He was recently awarded a patent for a new method (Baffle-pak) of food packaging which does not require refrigeration. He was director of research of the Health Research Foundation of Boston and a member of the American Institute of Food Technologists; American Chemical Society; American Medical Association; American Geriatrics Society; American Association for Advancement of Science; and the Packaging Institute." He leaves his wife Rose (Seiger); a son, Robert J. of Newton; two brothers; and seven sisters. . . . Last call for the '61-'62 Alumni Fund, and Alumni Day is on Monday June 11. Will you be with us? —**Edward B. Rowe**, Secretary-Treasurer, 11 Cushing Road, Wellesley Hills 81, Mass.

'07

At the beginning of these notes, I wish to emphasize the 55th Reunion of 1907 which will be held at Oyster Harbors Club, Osterville, on Cape Cod, Friday afternoon, June 8 through dinner on Sun-

day, June 10, 1962. It looks as though we will have an attendance of about 20 men; and if some of the 'Hope sos' can make it, we may have a total of 30. Please let me know, even at the last minute, if you can come. . . . The latter part of February, your treasurer sent out a request for class dues, which resulted in favorable replies from over 60 '07 men. . . . The request also brought in news about a number of our classmates. . . . **Bob Taylor** is now an associate with John V. Dinan, P.E. Consulting Engineer, at 303 West 42d Street, New York City. . . . **Parker Dodge** finds that, notwithstanding income tax time, retirement, and other things considered, he can write a check for '07. . . . **Tucky Noyes, I**, writes: "Running a class outfit calls for a lot of trotting around. The old saying, 'Money makes the mare go,' still holds good." **Don Robbins, II**: "When you receive this, my Sarah and I will probably be somewhere in Europe, possibly Rome or Athens. But our plan is to arrive in New York on the 'Rotterdam' on June 5, so as to get to Oyster Harbors by the 8th." . . . **C. M. Butler, V**, says: "I sure would like to see some of these 92 members who, like myself, are just able to sign a post card." Chet was able to sign a check also.

Fred Dempwolf, IV, sent a check and his 'Hope to' card for the reunion. . . . **Roy Lindsay, X**, writes that Mrs. Lindsay has not been well this winter, but he expects to make the reunion and take charge of those youngsters who are still able to play golf. . . . **Ed Lee, I**, wrote a nice note and sent a check from Sanibel, Fla., where he is so deeply engaged in real estate transactions that he will not have time to attend the reunion. . . . **Herbert A. Sullwold, IV**, writes from California: "Sorry I can't get back East, but I can help you out with postage money. So far, hale and hearty at 79." . . . **Wheaton I. Griffin, I**: "I have not been well and have not been out (except to hospital) since September. Very sorry I can't make reunion." . . . A nice long letter from **Sam Marx'** secretary informed me that shortly after Sam arrived at Palm Springs, Calif., to spend this winter, he suffered a serious stroke, followed by pneumonia. For three weeks the results were in doubt; but Sam, with his determined will to live and enjoy life, won out. At present, he is in fair condition and goes out to drive in the beautiful Palm Springs area and enjoys visitors as much as ever. His mind is completely alert, but his speech has been slightly affected. He still has to be under nursing supervision 24 hours a day and does his moving around in a wheel chair. If Sam could write, he would say, "Give my best to everyone in the class." —**Phil Walker**, Secretary and Treasurer, 18 Summit Street, Whitinsville, Mass.; **Gardner S. Gould**, Assistant Secretary, 409 Highland Street, Newtonville 60, Mass.

'08

We are sorry to report that we had to cancel the dinner meeting planned for March 7 due to lack of a quorum. We

can only blame it on the lure of Florida, the prevalence of flu bugs, and the inclement March weather. "Are we downhearted? No! Let the lion roar, etc." So we will try again and have our fourth and final dinner-meeting of the 1961-62 season on Wednesday, May 9 at 6 P.M. at the M.I.T. Faculty Club, Trust we can muster a quorum. Try to come, won't you? Remember, ladies are invited. . . .

Gregory M. Dexter has written me about the M.I.T. Club of New York monthly luncheons. Greg serves as secretary of the old timers table, '96 to '09 inclusive. These luncheons are held on the first Monday of the month at the M.I.T. Club, Hotel Biltmore, 43rd Street and Madison Avenue, N.Y.C. at about 12:15 P.M. If you are ever in New York at that time, why not try to attend one of the luncheons? I am sure you would be welcome. Greg reports that **Howard B. Luther**, **Joe Pope** and his wife, and **Leo Loeb** have attended some of the luncheons, during the present winter.

We are sorry to report the death of **Harry A. Rapelye** on February 20 at his home in Essex, Conn. Bob Keeney, '09, kindly sent me the clipping from the Hartford Courant, which follows: "Harry Andrew Rapelye, retired president of the Continental Can Company of Canada, Ltd., died Tuesday night at his home at 53 North Main Street at the age of 75. Mr. Rapelye received a bachelor of science degree from Massachusetts Institute of Technology in 1908. He was employed by M.I.T. from 1908-09, and until 1912 he was a commercial engineer for the Westinghouse Machine Company. He joined Continental Can Company in 1923, was named president of the Canada operation in 1950, and retired in 1952.

"He was born in Hartford August 23, 1886, son of Charles A. and Leona Taylor Rapelye. He had lived in Essex nine years. He was a member of St. John's Episcopal Church. Mr. Rapelye leaves his wife, Mrs. Alice Mahl Rapelye; two sons, Gardiner Rapelye of Kansas City, Mo., and Taylor Rapelye of Bethesda, Md.; a daughter, Mrs. Grant Cowherd of Kansas City, Mo.; and eight grandchildren. The funeral will be held at 2 P.M. Friday at St. John's Episcopal Church, Essex. The Reverend Peter Stone, rector, will officiate. Burial will be at the convenience of the family." We will miss Harry at future reunions but will still remember his singing of "Alouette" at our 50th. "So mote it be."—**H. Leston Carter**, Secretary, 14 Roslyn Road, Waban 68, Mass.; **Joseph W. Wattles 3d**, Treasurer and Assistant Secretary, 26 Bullard Road, Weston 93, Mass.

'09

We received the following letter from R. H. Walcott, '15. "Just in case you may have failed to see or receive the notices, I am taking the privilege of telling you that **Earl R. Hamilton** passed away on January 15 at the Monadnock Regional Hospital, Peterboro, N. H. He had been at the hospital about two weeks following a mild heart attack and was thought to

be making good progress toward recovery. Earl was a **resident of the neighboring village of Hancock, N. H.**, for about 10 years following his retirement from the New England Gas Company system in Boston. I am sure that you have a record of his professional activities. During his residence in Hancock he enjoyed an active and useful participation in civic problems of the village, and the little Congregational church there became his top interest and concern next to the deserved prideful interest in the families of his five children." Earlier we told of Earl's having been an engineer with the New England Power Service Company for more than 40 years and of his association for many years with the Nashua Gas Service Company. This is very sad news for us for we all remember how active Earl and Mrs. Hamilton were at the 50th Reunion and how we all enjoyed their company. In The Review of June, 1958, we told of the marriage of Earl and Katherine Birch at Norway Hill, Hancock. In addition to his wife Katherine, Earl leaves three daughters, Mrs. Leslie Wright, Mrs. Harold Tenant, and Mrs. Oscar Kozek; two sons, E. Robert Hamilton and Richard D. Hamilton; and several grandchildren. We have written to Mrs. Hamilton conveying the regrets of the class as well as our own.

We also received a letter from Mrs. **Harold Locke Lang** from Pittsburgh telling of the death of her husband on December 6, 1961. His ashes were placed in the Allegheny Cemetery Mausoleum in Pittsburgh. "My sons and I are most grateful for the many letters which have come to me in regard to Harold's bequest. I have sent them on to the sons, and the names escape me. We are proud that Harold remembered his alma mater. The Class of '09 of M.I.T. meant a great deal to him." Mrs. Lang enclosed a check for \$521.46 to the Institute. Through the good offices of Art Shaw, I, and Chick Kane, '24, this amount has been added to the "Class of 1909 Memorial Fund" initiated by Hazel Gram as a scholarship fund, preferably to descendants of members of the class. Harold Lang's name will thus be added to the list of those memorialized. Harold Locke Lang was born in Franklin, N. H. Following two years of graduate work at M.I.T., he worked as a scientific assistant for the United States Department of Agriculture. He went to Carnegie Tech in 1917 as a professor of biology and public health and in 1929 was named head of the general science department, a post he held until his retirement in 1955. He also served as chairman of the Pittsburgh section of the Institute of Food Technology from 1951 to 1952. Since 1955 he had been chief bacteriologist for the Duquesne Brewing Company. He was a fellow of the American Public Health Association and a member of the Society of American Bacteriologists, of Sigma Xi, Phi Kappa Phi and Theta Chi. A 32nd degree mason, he was a treasurer, an honorary warden, a member of the vestry, and a lay reader at the Fox Chapel Community Episcopal Church. Surviving are his widow, Lillian Stanley Lang; two sons, J. Stanley and Dr. H. Bickford; a brother, Walter Warren Lang; and three grandchildren. We

have written to Mrs. Lang expressing the sympathy of the class as well as our own.—**Chester L. Dawes**, Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass.; Assistant Secretaries: **George E. Wallis**, Wenham, Mass.; **Francis M. Loud**, 351 Commercial Street, Weymouth 88, Mass.

'11

Fred Harold Daniels, VI, of Worcester, Mass., has been very active in his home town. The following quotations are from a clipping in the March 7 Worcester Gazette. It was sent to me by Sallie Denison, widow of our well-remembered and much loved Dennie, who was secretary of the Worcester Chamber of Commerce for several years. "Trustees at Worcester Polytechnic Institute have named a proposed dormitory Daniels Hall for a family of Worcester industrialists. Ground will be broken May 5. It will house 177 students and include a snack bar, bookstore, meeting rooms, and student lounges. Among those honored is the late Fred Harris Daniels, a Tech trustee, chief engineer for American Steel and Wire, and chairman of the board of engineers for United States Steel Corporation. His son, F. Harold Daniels ('11), now is a Tech trustee, member of the college executive committee; he received an honorary doctorate of engineering at W.P.I. in 1941. He was formerly chairman of the board at Riley Stoker Corporation."

Roy G. MacPherson, II, of Framingham, Mass., suffered a fracture when he slipped and fell. As of March 14 he had been in the Veterans' Hospital in West Roxbury, Mass., for over a week and hoped to get home in another week. He expected to have to wear a steel corset for another three or four months. Our best wishes for his recovery. . . . **Richard W. Cushing**, VI, of 3206 Rolling Road, Chevy Chase, Md., died November 17, 1961; his passing was reported to the Alumni Register by his widow. He is survived by his wife and a sister, Mrs. Edward Souther of Cohasset, Mass. He was head of the Projects and Land Section and supervising hydraulic engineer with the Federal Power Commission, Washington, D.C. Our sympathy goes to his family.—**Henry F. Dolliver**, Secretary, 10 Bellevue Road, Belmont 78, Mass.; **John A. Herlihy**, Assistant Secretary and Treasurer, 588 Riverside Avenue, Medford 55, Mass.

'12

Word has just reached me of the death of General **Edward Montgomery** at the Walter Reed Hospital in Washington. After graduation Ed was commissioned in the Coast Artillery, later transferring to the Field Artillery. After his retirement from the service in 1949 he was connected with the American Cyanamid Company in New York until 1953. He is survived by his widow and two stepchil-

dren, Adelaide Smallwood of Alexandria, Va., and H. R. Oldfield, Jr., of Weston, Mass. . . . During a short trip to Florida last month I was able to call on **Chauncey D. Davis** at 404 North Torrey Avenue, Ocala, Fla. Chauncey suffered a slight shock about three months ago but is recovering satisfactorily. Unfortunately he will not be able to get up to our 50th Reunion. He retired as a captain in the Naval Construction Corps, having left Newport News for a building company early in World War II. . . . **Frank J. Osborne** of 40 Woodland, E. Orange, N.J., writes that he is not well enough to come up for our 50th Reunion as he is under doctor's orders to lead a very quiet life. He would be pleased to hear from his old friends. . . . **John Hall** writes from 3 Morris Street, Freehold, N.J., that he does not feel able to come up for the 50th Reunion. . . . A card from **Jay** and **Priscilla Pratt** shows them partaking of a bowl of yanqoma, a traditional "stew" offered to honored visitors in the Fiji Islands. If they survive they plan to be at the Cape with us.

The Reunion Committee for our 50th reports that the preparations for a splendid reunion at Snow Inn, Harwichport on Cape Cod, are in progress. The entertainment committee headed by **Jay** and **Priscilla Pratt** jointly with **Harold** and **Helen Manning** is planning a social and happy gathering of 1912 men and their families with things to do and places to go. Over 100 have registered at Snow Inn and the committee is eager to have others register there soon, since the more who attend our 50th Reunion, the more the pleasure of renewing long standing friendships. You remember that the Class of 1912 is specially invited to commencement exercises in Cambridge on Friday, June 8. These conclude in early afternoon so that there will be ample time to reach Snow Inn for the evening dinner—informal, of course. Saturday, June 9, is the big day in the beautiful Cape Cod seashore setting. Sunday will conclude the active program. Alumni Day in Cambridge is scheduled for Monday, June 11, and we hope to see you there. . . . **Cyrus F. Springall's** work on the transportation committee for the reunion was interrupted by his long hospitalization previously reported in these class notes. Cy is at home now at 100 Sunset Rock Road, Andover, Mass., and is recovering quite well. He walks with a cane and is responding to physiotherapy treatments. Cy and Mrs. Springall plan to spend a month on Lower Matecumbe Key, Fla., leaving home on March 5. The good news is that they plan to be with us at Snow Inn, in June. That is the spirit! Let's all be there to greet them.—**Frederick J. Shepard, Jr.**, Secretary, 31 Chestnut Street, Boston 8, Mass.; **John Noyes**, Assistant Secretary, 3326 Shore Crest Drive, Dallas 35, Texas.

'13

Thirteen months from now you will be celebrating your 50th Reunion in June, 1963. Are you making your plans to be

with the honored class? . . . **George A. Richter**, although disturbed with world conditions, is still optimistic and believes in living in the present. . . . It was very gratifying to receive messages and greetings during the holiday season from many of our classmates or their families including, **Esther Rand** (Mrs. Howdy), the **Charles Thompsons**, the **Lester Gustins** and **Bob Weeks**. The **Robert Bonneys** wrote: "Still living the pleasant life of a country squire. I have acquired one more avocational job—assistant editor of the Maryland Archeological Society. I don't see how you keep occupied with nothing to do except real estate, insurance, politics, and the Class of '13. Our best to Roz." . . . From the **Bill Mattsons**: "We often think of you two and hope you are well; we love to hear from you—direct or via The Tech Review. I will write you soon." . . . The **Allen Brewers** say: "I hope you folks are planning another Southern toot soon. We've got a lot to show you. The home is really livable now. As for news, I'm writing a series of articles for Machine Tool Blue Book; it's a nice assignment though it cramps my fishing style." . . . **Andy Yogel**: "The July, 1961 Tech Review on page 98 referred to the 1963 reunion. I hope you will keep the reservation at the Oyster Harbors Club. I am sure it will attract a larger group. I do not like motels or hotels except for business purposes. Also people wander too much when near a large city. This may be our last chance to have good long conversations. I hope all is well with you all." . . . **Jubie Portal** (Mrs. **Robert T.**): "I hope you have both had a good year and an even better one to come. My best to you both." . . . **Janet Nason** wrote, "We spent a wonderful Thanksgiving with Daddy. He looks wonderful and is very happy." . . . The **Ellis Brewsters** sent a very unique card, silhouetting **Bill** and **Ellen** and the 20 grands. On January 19, **Bill** and **Ellen** became great-grandparents when **Jonathan Brewster Keller** was born. With Mrs. **Benjamin W. Hatch**, the great-great grandmother, the Hatch-Brewster combine has established a real American family record, of which we of 1913 are very proud. . . . Of course, we heard from **Captain Irving McDaniel**, '16, and our girl **Katharine**. Mac's cards are always original and hand-colored. From the foreign countries listed, the **McDaniels** must be the advance agents for **Jackie Kennedy**.

Jack Farwell is still worried about class dues. Your treasurer has notified Jack that he is a member in good standing and he and **Jeannie** will be permitted to attend our 50th Reunion. We quote in part: "Jeannie and I are fine, very busy, as usual, and looking forward to June, 1963." . . . **Warren Gentner** has taken enough time from his arduous duties as a retiree to bring us up to date on his activities. "My first year of retirement is fast drawing to a close and if those that follow are as rewarding as this first one, then I shall indeed be grateful. Because of Mrs. Gentner's health, we lead a rather quiet life as far as activities are concerned. We are planning the usual winter trip to Florida early next month. Hope the weather down there will be more

seasonable by that time. Please accept my belated wishes to you and yours for a very happy and prosperous New Year." . . . **Robert Tullar** writes as usual, a very newsy letter: "A week ago tonight we had dinner with **Dorothea** and **Bob Weeks** at their home in West Chester, Pa. It was a fine dinner and a pleasant evening with two gracious friends. **Bob** doesn't get out much but he sure enjoys having his friends drop in to see him. We enjoyed his color television set with them and looked at some of his silver treasures that he picked up when he was in LaPaz, Bolivia, years ago. . . . My good friend **Emerson L. Bray** had a coronary occlusion in December. I am glad to report that he is making fine progress and we all look for a complete recovery. The **Brays** and **Tullars** had an enjoyable trip to Spain, France, and Switzerland last year."

Again we hear from **Dave Stern**, who was very solicitous of your scribe's health. Many thanks, **Dave**. It has been a long struggle of several months that yours truly has fought repeated viruses, and only now has the doctor been able to give a good bill of health. Here's looking forward to warm weather. . . . The **Charlie Thompsons** have been sojourning in California since the middle of January. We have heard from them once, when they reported some rain but temperatures in the 70's and 80's. They have been near **Charlie's** daughter and family, but we surmise that they have enjoyed some of that really snowy weather by now.

It is with great regret that we announce the passing of another classmate, **Leon L. Katzenstein** in University City, Mo., on January 30. To **Leon's** family we offer our most sincere sympathy. . . . A very cordial note has been received from Mrs. **Menderson** and we quote in part: "Dear **Edgar** had spoken of returning to M.I.T. for his 50th Reunion. The Institute and his friends there, such as you, had a warm spot in his heart. Although he was a Yale graduate, I believe his M.I.T. years meant most to him."

A most attractive folder and reservation sheet was received from the Fiesta Committee, M.I.T. Club of Mexico City. It appears that this year marked the 14th M.I.T. Annual Fiesta which was held in Mexico City March 15-17. We hope that some of our '13ers attended this year's Fiesta and were able to renew our never-forgotten days with **Manuel A. Hernandez**, Plaza Carlos J. Finay 3A, Mexico D.F., Mexico. We are looking ahead to June, 1963 to greet **Manuel** at our 50th. . . . So gals and pals, the 1962 Alumni Day is almost in sight and it is hoped that many of you local or neighborly classmates and wives will be with us so that we may discuss the plans for that grand and glorious 50th Reunion in 1963.—**George Philip Capen**, Secretary and Treasurer, 60 Everett Street, Canton, Mass.

'14

Dean A. Fales had been quiet for just too long, when out of the blue the Portland, Maine, Telegram came out with a

red hot column by Hal Cail. If you still have a February 18 issue, just reach for it and read it. Your secretary at once reached for the telephone (low rates you know on Sunday) and there was Dean, full of pep again and forgotten about his indisposition. Right off, Dean says, the weather has been the worst and snowiest ever. It is so deep he says that he just walks out the second story window because he cannot get the snow shovelled to ground level before May Day. Good as it is, The Review editor would not permit use of the whole column so just one paragraph from the Telegram story must be sufficient. "Well, the reaction set in on Tuesday. A letter from an unexpected source, although once over the initial surprise, I wasn't the least bit surprised. It was from my stalwart friend, my incomparable host, my younger-than-springtime friend, Dean A. Fales of Kennebunkport. In the mechanized world, Dean Fales is an authority on the horseless carriage, past, present, and future. What he doesn't know about them doesn't make much difference. What he thinks of some of the modern gasmobiles needs heavier paper than this to withstand the brimstone quality. As hosts, Dean and his wonderful wife, Lenabel, are tops, and as a raconteur of tall tales, reminiscences and folklore, Fales, like Jimmy Durante, 'has a million of 'em.' Nor has he lost that twinkle in his eye that denotes a man who still enjoys life to the full."

Herman Affel sent in this next item about **Harold A. Mayer** who has been in Portland, Ore., for many years. Although officially retired, he is still teaching on a substitute basis, mostly in French. He is also familiar with German and a little Spanish, enough to teach. Mayer has a son who is in high school and getting ready for college. . . . Last week the fourth annual Lester D. Gardner Lecture was held. As there were several old timers present who had come from New York and even farther, the subject of the lecture, "Aircraft Propulsion," was appropriate. **Dinny Chatfield** came up from Hartford. Although now fully retired, Dinny appeared to be just as active as ever. He said that his young lady, now in her first year of school, was plenty to keep him busy without looking around for a part time consulting job. . . . It was noted a year ago that **Clyde P. Ross** had retired. Since then he has received two distinguished awards for the work he has done over 43 years. The first, from the Secretary of the Interior, is the highest honor, the Distinguished Service Award. The second citation is from the Northwest Scientific Association for "outstanding contributions in the field of science in the Pacific Northwest." These two citations, read in detail, reflect great honor to Ross. . . . **Arthur W. Johnson**, formerly with the State Mutual Life Assurance Company in Worcester, has retired and is living at Wolfeboro, N.H. . . . Another of our retirees is **Malcolm J. Sayward**, who has left Groton, Conn., and is now living at Largo, Fla.

Two more of our classmates have passed on. **Henry T. Chandler** died on July 19, 1960, but no word came to us until this month. He came to the Institute

from Vancouver, B.C., and after leaving here he worked in metallurgy in Detroit. From 1927 until his retirement in 1958 he was with the Vanadium Corporation in New York City. He was also associated with the Class of 1915. We have no family record of him. He was a Delta Tau Delta. . . . **Benjamin Coffin Cromwell** died on February 5, 1962, after a month in the Martha's Vineyard Hospital. A fire destroyed his home on Chappaquiddick Island last fall; this event was followed by pneumonia. Ben was born in Vineyard Haven and lived there practically all of his life. He had served as moderator of the Town of Tisbury and was on the Finance Board for several years. He was also proprietor of the hardware store in town. One son survives him. Those of us who attended our 20th Reunion at Oyster Harbors will recall that Cromwell attended and arrived by sailing his own boat over from Martha's Vineyard. He was a Kappa Theta.—**H. B. Richmond**, Secretary, 100 Memorial Drive, Cambridge 42, Mass.; **C. P. Fiske**, President, Cold Spring Farm, Bath, Maine; **H. A. Affel**, Assistant Secretary and Class Agent, R.F.D. 2, Oakland, Maine.

'15

The July column will give you the play by play on our Boston Class Dinner to be held May 11. We've been stirring up the local gang to beat that record New York attendance of 28 at their January 26 dinner. You'll read all about it.

On the afternoon of Alumni Day, June 11, at 4 o'clock, we'll have our annual Class Cocktail Party at the M.I.T. Faculty Club, Cambridge. Classmates, families and guests are all invited at no charge. Even if you don't go to the Alumni Dinner later, do come to the gala Class Cocktail Party and see all of the old gang. . . . Fran and I were delighted with a visit from **Bill Campbell**. He has been taking it a little easier, spending some time at an old family estate in Manchester, Vt., which he hopes to have in shape for next summer. He will add to the 1915 Alumni already up there—**Doug Baker** and **Boots Malone**. Bill gave me an enlarged picture of an old 1912 summer camp crowd, and it was exciting trying to recognize some of the fellows when they had hair and weighed only 125 pounds. . . . **Frank Murphy** came in to see us one evening. He has been retired from the New Haven Railroad for a few years. After a year in Florida, he gave up to return to live in Boston. . . . To add to our field day of visits from classmates, on a snowy Saturday afternoon, **John Dalton** came to see us. Retired and liking it, John lives quietly and leisurely in Providence and has become a real big league tournament bridge player and boasts eight master points. . . . Suffering in the 70-80 degree February heat in West Palm Beach, **Jim Tobey** found time to write a long article for the January issue of Public Works Magazine on "Water Fluoridation and Civil Rights." It represents a lot of reading and research and

stamps Colonel Jim as a lawyer as well as a doctor of public health. . . . **Richard M. Field**, listed with our class but never active, died September 17, 1961, in Duxbury, Mass. . . . **Clyde (Hoot) Mackenzie** has been seriously ill in the Rhode Island Hospital, Providence. We all wish Hoot a speedy and complete recovery. From this short column you can easily see the why and wherefore of "Help Azel."—**Azel W. Mack**, Secretary, 100 Memorial Drive, Cambridge 42, Mass.

'16

We are proud to start off again with a message from that amazing, still-skiing-in-Switzerland-at-his-age class president of ours, **Ralph Fletcher**: "The responses to our 46th Reunion notice have been coming in steadily, and we are happy to report that it is beginning to look as though we will have another fine attendance. There are still a number who have not answered our notice. In this group there are some who have been regulars at our reunions, and we are hopefully optimistic that many of these will be on hand again. Also among those from whom we have not yet had a response there are those who attended one or two reunions many years ago and none since and those who have never attended. To these we make a special plea, try to make it back next month. We have a wonderful group of classmates and their ladies at these reunions, and everyone has a great time. Once again the dates—Friday, Saturday and Sunday, June 8, 9 and 10, 1962. The place, Chatham Bars Inn, Chatham, Cape Cod, Mass. The weather outlook—clear, sunny and warm—perfect for the old-fashioned New England clam-bake to be served at the shore's edge. Attendance prospects? You have the answer to this. Be kind to yourself; attend the 46th Reunion."

In November we mentioned the **Art Shueys'** forced stay in England and Scotland about a year ago, when Art lost a part of his stomach in an emergency operation and ended up with seven pints of English blood that made him feel "almost British." Word via Ralph Fletcher in January indicated that the Shueys had booked again for an around-the-world sailing from San Francisco in August. They plan to go to Honolulu, Hong Kong, on a tour in Japan, Australia (for a stay, where they have relatives), the South Pacific, Ceylon, India, Aden, through the Suez, Egypt, the Mediterranean, three weeks in England, and then home on the France in time for Christmas. . . . Back in February, we understood from **Bob** and **Pearl Wilson** that **Bill Leach** was hospitalized in his home town of Austin, Texas, for a week. When the trouble was not located there he was transferred to a hospital in Houston where he had expert care under a famous lung specialist. The trouble turned out to be not serious, only an infection. So it was not long before he was up and around again. . . . Late in February **Bob Wilson** was off to Pinehurst, N.C., to try to get in some winter

golf which he was apparently promised when he moved to Washington but which, so far, had not materialized in either winter. He and Pearl later headed for Phoenix, Ariz., (with stops at Albuquerque, Los Alamos, and Santa Fe) and expected to return about the middle of March. It happened that when your secretary arrived in Albuquerque on March 4, the hotel clerk gave us a message from Bob, that they had left the day before. Small world!

Phil Baker does it again. He makes us feel good every now and then by saying he enjoys reading the class columns. He applauds the active '16ers, thinks their stories are well worth reading by a larger audience and notes "a class of our vintage is certainly and characteristically scattered and wandering around the globe."

... **Duncan S. Owler**, too, sends his encouragement and best wishes and says the reason he hasn't written oftener is that he hasn't had anything particularly of interest to write about. Perhaps, however, he could tell us, now that he is retired, about some of the odd or funny problems that the president of a big power and light company contends with or, if these are not printable, he could tell us in person at the 46th. Anyway, this is an invitation! If he, as past president of the Fall River Power and Light Company and **Larry Knowlton** as past executive vice-president of the Providence Gas Company could exchange anecdotes, we vow it would make good listening. Duncan allows that as soon as he has any news of interest "I'll lose no time in sending it to you." ... Speaking of reunions, remember years ago at one of our reunions when two '16ers found that each was the other's unknown hard-hitting competitor, and was it Bob Wilson, in oil, who was promoting short candlesticks in order to sell longer tallow candles, while was it **Bill Shakespeare**, in copper, who was promoting tall candlesticks in order to sell more silver?

We just wish we had space to present much more of **Irv McDaniel's** absorbing three-installment (so far) report of the trips and explorations he and his wife are taking and making on their way from Spain via Egypt, India, Ceylon, and Thailand back to the States. Again, we can give only excerpts. Going back to his story of the Nile, he speaks of the Temple Der El-Bahri (1600 B.C.), as "the most beautiful of all," an enormous structure, "built on three levels which has a Greek classical appearance. There is nothing like it in Egypt. On the second level there still exists the reference point from which all measurements were made. A long vertical or horizontal straight line has an optical illusion and looks concave. The Greeks are credited (like at the Acropolis) with inventing the convex line to correct this illusion. Don't you believe it! The Egyptians were doing this 1,000 years before there was a Greece, and their columns were not only convex but tapered as well!" Irv then writes of their trip up the Nile aboard the S.S. Delta: "It is the only boat going up the Nile, has accommodations for 40, and all rooms have beds (not bunks) and baths. It will make only a few more trips and then all

this will be terminated due to the new dam the Russians are building above Assuan. It is the ideal way because the ship stops at every temple and there are conducted tours ashore. Most of the evenings we were tied up on the beach and had native entertainment—the Nubian Dancers are wonderful. What I enjoyed was the native life along the river: the mud-brick villages, the native children, man's first invention—the water wheel, the beautiful felukas—native sailboats, the distinct line of the desert always forever trying to encroach a bit more on the natives, a crocodile sunning in the sand banks of the river. Every minute of the trip was exotic, colorful, fascinating, and very photogenic (I hope)." He speaks very enthusiastically of the Nubians: "Most of them are Christians (Copts). They start at Assuan and go up both sides of the Nile—the farther up you go the blacker they become, and they have fine features. They live in mud-brick huts and usually in their villages there isn't a blade of grass, a shrub or a tree—nothing but rocks. They are very likeable, have a wonderful sense of humor and are tireless workers. Each man has three or four wives and from 25 to 30 children. All the officers and crew of the Delta were Nubians. Every day I would seriously shake hands with the captain, the mates and most of the crew. They are a proud race and historically they have a right to be." Then Irv says: "Assuan is lovely but the Island of Philae is no more. The old dam now covers it all and just the top of a pylon from the Temple of Isis shows above the water. Did you know that several tales from the 1,001 Arabian Nights had their locale on Philae? I consider the ending of one of them a classic. The Prince finally found his Princess at Philae and they were married. (Quote) 'So they lived in the bosom of happiness to the advanced age at which the roses of enjoyment must shed their leaves and tender friendship take the place of passion.'" In his lively and interesting description of "Life on the Ocean Wave," written at sea off India, Irv includes observations regarding several ports. For example, he writes of Port Sudan, the only outlet for Sudan's products: "seventy percent of their production is in long staple cotton and they grow 30 percent of the world's supplies." It is a very busy port with 20 to 26 ships per day. "There is lots of new housing, but it is for the army only. The natives consist of several tribes, mostly Moslems. The Nubians are there in force but the most interesting ones are the fuzzy wuzzys from equatorial Africa. They are jet black but with thin lips and refined features. They wear their hair long and it sticks out like the Fijis, and they dress their hair with camel dung. Many of the men wear Mary Pickford curls in the back. They were our stavedores and the hardest working lot I have ever seen. They are happy, but they won't let you take their picture. They own thousands of camels, fine-looking humpback Brahmin cattle and millions of goats and sheep. The women wear the most colorful and exotic sarongs. The people live together in the worst filth I have ever

seen, and they enjoy it. I understand it eventually gets even too filthy for them and they move on to other acreage. Katherine has censored all the vivid details. Perhaps she is right as I doubt you could appreciate the conditions or believe them if I were more graphic. Can you imagine the Peace Corps here?" So once again many thanks to the McDaniels for the intensely interesting account of their travels, to be augmented, we expectantly hope, at the 46th Reunion in June.

George H. Petit continues active in his trend analysis specialty and is frequently quoted in sports columns and elsewhere, not always just a phrase or two but sometimes whole letters of his. One such appears in sports editor Bill Lee's column "With Malice Toward None," in the Hartford Courant's February 8 issue. The subject was the divergence of opinion as to whether one contender should "have a crack at the world heavyweight boxing championship." The sports editor feels one way, and says: "The opposite view has been expressed forthrightly by George H. Petit, who does me the honor of sending me his opinion on various matters. This is his letter." This newsclipping came from another source, but we also had a letter from George in reference to other things. He writes: "My son will have completed his three-year enlistment in the Army in April. He is in the Seventh U.S. Regular Army in Germany where he has now served over two years. He holds two expert rifleman and sub-machine gun medals and was recently promoted. It may be remarkable that 45 years before my son enlisted in the army I enlisted, a few months after graduation, with General Pershing in the punitive expedition against Pancho Villa in Mexico. Later I was in the Sixth U.S. Field Artillery of the First Division and later transferred to the Tenth U.S. Field of the Third Division in the A.E.F. in France. Our division was replaced 125 percent. After that experience I ask you why am I living to carry on the banner of 1916 beyond the middle of the Twentieth Century?" George notes that the 50th Reunion in 1966 "will be conducted by Ralph Fletcher under a re-entry temperature of 3000 degrees F."

A letter from **Dr. Morris B. Sanders** adds a bit more information to his story in the January issue: "In seeing in print the juxtaposition of the names of V. Bush and N. Wiener recalls to my mind that I left out an important Tech personality in the class letter, that of Mrs. Bertha Hornby (Hornby being her married name the last five or six years of her active life) of Rockport, who was a secretary at M.I.T. for many years; her service included being secretary to both Bush and Wiener. In addition, she typed many a thesis for students; in fact, in 1956, about two years before her death, she typed a thesis for an Egyptian protégé of mine. Since I corresponded with you in November, I have written another set of letters relative to Welles Bosworth, '89. The mayor of Vauresson, home of Villa Marietta, wrote me for biographical details of W. B. in addition to already recorded professional details. Researched details of Marietta, Ohio, brought me new historical

data: Marietta was founded by a group of citizens from Newburyport, Mass., just after the American Revolution, accompanied by General Putnam of Washington's staff. What is of interest in this particular case is that W. B. was born in a town famed for its shady elms and architectural beauties, and named after Marie Antoinette! Marie Antoinette's Petit Trianon at Versailles is only three or four miles or less from 'The Villa Marietta' of Vaucresson!"

Bill Drummey keeps going, this time as the director of things to be, under the newspaper caption "New African School to Withstand Ant Armies." Those who read the Sunday Globe in Boston saw a fine dignified picture of him as the key figure in a group of four architects, pointing to some feature of the plans for the first secondary boarding school to be built in Uganda. The caption of the picture reads: "Designing School in Africa, left to right, Boston architect David Anderson, British architect Alan McOnegal, Richard Rosane, and Colonel William W. Drummey confer on plans for new girls' school in Uganda." Bill's Boston firm of Drummey, Rosane, and Anderson was engaged by the University of Massachusetts as consulting architects for the project, sponsored by the State Department's Agency for International Development (AID). The State Department has contracted with the University's Department of Education to build the school, staff it initially, and recruit teachers for it in this country. They will staff it for a limited period until African teachers can take over gradually, and an American headmistress will be in charge for eight years. Uganda is scheduled for independence from the British Commonwealth next October. The choice of Bill's firm is due to the long and wide experience of Bill himself in designing many schools in New England. Many new problems are involved in the project. As the Globe says: "The school will consist of a series of quadrangles, with all buildings to be connected by covered walkways for protection against the heavy rains. The area abounds in anthills 10 feet high, and because the ants would quickly eat canopies of wood, they will be made basically of concrete and asbestos materials. In an area where the temperature in the hot season reaches 150 degrees, the school buildings must take advantage of the prevailing wind and what little shade there is. Most of the girls who attend it have never turned on an electric light bulb, or experienced a hot shower or for that matter used hot water at all. They will be taught, among other things, to cook over a modern range for the first time, and to use a telephone and the sewing machine. The idea is to teach them civilized social customs in preparation for their nation's independence." Mr. Anderson left in January and will be in Uganda for three months and says he will try to make sure the school will be capable of teaching American methods.

Hearing that **Moose Jewett** had been hospitalized, **Jim Evans** sought and received information from both **George Tuttle** and **Ray Brown** in the Buffalo area. As Ray Brown notes, Moose contracted a

virus last October after an operation which kept him in bed for several weeks. To get rid of the virus, the doctor thought he should go to Florida. This Moose had planned to do anyway, so off the Jewetts went on January 15. He was reported to be making such good progress in mid-February that he could "play nine holes of clock-golf; that is, he has to watch the clock." He also was driving his car again. . . . **Val Gooding** was accorded a signal honor following his recent retirement as technical director of the Strathmore Paper Company of Springfield, Mass. The Hyde Park Tribune, Boston, Mass., of February 1, reports the story under the heading "Scientific Library Named for Ex-Hyde Park Resident." "In commemoration of a long-term effort dedicated to building a technical reference library for the company, Strathmore Paper Company has officially named its research library 'Gooding Library' in honor of Percival P. Gooding. Present at the dedication were Mr. and Mrs. Gooding and Henry Johnston, President of Strathmore, who made a progress report about the library. Gooding Library, located in the Strathmore Research Laboratory in West Springfield, is considered to be one of the most complete sources of technical material available to personnel in a paper company, the company said. Most of the material for the new library has been accumulated over the years Gooding has served with Strathmore. Under his direction various technical and scientific periodicals and publications relating to paper manufacturing have been gathered, classified, bound and indexed. The library is registered in the Connecticut Valley Library Association."

A card from **Jack Hickey** late in February indicated that Jack and his wife were getting some warm sunshine in Puerto Rico instead of the repeated snowstorms most of us had to contend with up this-a-way. From the Dorado Beach Hotel in Dorado came the message: "Greetings from a glorious spot. Eleanor and I are enjoying every minute." . . . About the same time too, the **Peb Stones** were off to the Caribbean for a six week's stay. We only hope these vacationers appreciate how well we take care of things for them up North here when they are away; and we include the Metropolitan New York area too! . . . On a stop-over at the Dallas airport on March 9, we had a pleasant telephone visit with **Mark Lemmon**, who, as we all know, is a prominent architect and has been one of Dallas' outstanding citizens for many years. Mark continues active and expects to continue so. He told us to tell **Mac McCarthy** that Dallas misses him (Mac retired last year as chairman of the board of Chance-Vought), wanted to be remembered to Steve Brophy, asked us to transmit his best wishes to the entire class, and indicated that attendance at the reunion was well within the realm of don't-be-surprised. . . . We have had some correspondence with Dick Whitney, '17, who has been interested in Irv McDaniels' doings and has asked for Irv's itinerary and roving addresses. Dick actually visited the McDaniels in Torremolinos, Spain, about two years ago and has been work-

ing on plans for a boat trip not unlike Irv's present one. We are sure Dick could find on earth no better source of information. We quite look forward to meeting the Whitneys in June, should the management of 1917's 45th Reunion in Harwichport on the Cape consider the possibility of allowing Dick and Mrs. Whitney to visit the 1916 Reunion on the night Irv (we hope) shows some of his pictures of Egypt and elsewhere. Dick notes: "Perhaps I may get a chance to slip over there anyhow to say hello to those of 1916 who still remember me." So this is an invitation, in print!

Francis E. Stern has on several occasions sent us letters from Palm Springs, Calif., designated "dictated in Palm Springs" but bearing a Hartford, Conn., postmark and the question has arisen: How come? Was he dictating over the long distant telephone and trying to improve AT&T earnings? No. Now we know. He has a dictating machine, and sends the belt or tape by air mail to his secretary in Hartford. In January, Francis says the weather in Palm Springs, while good early in the month, turned cold and snow was seen in some California cities that haven't seen it in 30 years. "Today has been a particularly cold one here, with the thermometer down to the high 40's at noon time which you will admit is cold for the California Desert." Francis keeps more than busy managing several trust funds, for some of which he is sole trustee. He expected to be back late in March and attend the April luncheon in New York. . . . **Steve Berke** wishes to express his thanks to the many who sent him letters after he came down with a heart attack in November. In mid-February he said his mail was terrific and "all the good wishes have helped me make a fine recovery although I am restricted against working and the diet is a tough no-salt schedule." He noted that he and Louise expected to get away to warmer climes but probably only for a couple of weeks. . . . Winding up their European trip with a visit with daughter Cynthia and family in Vence on the French Riviera, the **Steve Brophys** got home on February 25. Apparently they had a wonderful time, were well all the way. Their message included: "Paris was great, London fine, Copenhagen, cold, Hamburg, swell, Amsterdam, dandy, but oh you New York!"

1916's much honored member, **Vannevar Bush**, has done it again. This time the well deserved praise comes in the form of the 1961 Charles F. Kettering Award of the Patent Trademark and Copyright Foundation. The presentation took place at George Washington University.

In conclusion, keep open the dates of our 46th Reunion, June 8, 9, 10, and join the fun and conversation and golf and, we hope, see some first-hand pictures of what Irv and Kay McDaniels saw on their travels in Egypt, the Near-East, the Far-East, at the Chatham Bars Inn in Chatham on Cape Cod. We are aiming especially at full-time or part-time attendance of every '16 resident of the Cape which we missed last year on the 45th. And another thing, if you live near New York or expect to take a trip to New York, plan

to be there on the Thursday following the first Monday of any month (e.g., May 10, June 7, July 5), and join the monthly 1916 luncheon in the club rooms of the M.I.T. Club of New York, Hotel Biltmore, close to the Grand Central Station. Help us to outnumber the '17ers even though this is their 45th Reunion year! And keep the bits of information (not necessarily news) coming in. **Harold F. Dodge**, Secretary, 96 Briarcliff Road, Mountain Lakes, N. J.

'17

Our 45th Reunion plans are developing well. Registration now is 70 men and 56 wives. Snow Inn at Harwichport indicates that reservations with them are in keeping with our registration. **Rudy Beaver** has come up with very attractive 1917 identifying pieces. We believe that the reunion souvenir will be well received. So we are getting set. How about your reservation? Make it direct to Snow Inn. Remember, too, that **Loosh Hill**, Treasurer, is always ready to receive the \$15 registration fee at 19 Congress Street, Boston 9. . . . **Tubby** and **Ruby Strout** have bought a home at Osterville on Cape Cod where the welcome sign is always out at 48 Parker Road. They'll be at the reunion, of course. . . . It will be recalled that **Dud Bell** was not exactly enthusiastic about the wives attending our 40th reunion. Well, he has capitulated and Mrs. Dud will be there this time. Dud had such a satisfactory cruise in a sloop in Holland last year that he is checking with **Jack Wood** to see if he can rent another sloop for some sailing about Cape Cod, maybe at reunion time. Dud is planning a cruise in Aegaen waters around Greece next year.

Jack Wood, in so-called retirement, keeps his hand in on sailing activities pretty well. One of the things is regular meetings of the Yacht Racing Union comprised of some 30 greater Boston yacht clubs which are held at the Institute. . . . We are sorry to have to report the death of **Franklin M. Davis** of Gray, Maine. . . . As of January 31 our 1917 contributions to the Alumni Fund were running just a little behind those of last year. In dollars we are only 5 per cent off and in contributors just eight men short. It is good to see some new names in the listing. If you have not sent your contribution for this year, now is a good time to do it. . . . If you haven't made your reunion reservation now is the time to do it.—**Stanley C. Dunning**, Assistant Secretary, 1572 Massachusetts Avenue, Cambridge 38, Mass.; **W. I. McNeill**, Secretary, 107 Wood Pond Road, West Hartford 7, Conn.

'18

To those of us who honestly believe in the sanctifying grace of sincerity, it is really a great compliment to other people to tell them frankly what we really think. Sometimes it is painful to tell the truth,

especially when it has to do with one's personal life. Sometimes it is a joy, especially if one is a truly good craftsman in his professional field. There is a vast difference between self respect and egotism. But with even a healthy, self-respecting attitude toward one's accomplishments, no one who works in a truly creative field, and who has any gift of ability to support his effort, ever feels quite satisfied with what he does. Certainly no man of achievement ever has as large an opinion of himself as that held by his colleagues and his admirers. Among the 1918 men of real achievement is **Albert C. Walker**, whose letter inspired the reflections noted above. Says he, "As you know, I was retired from the Bell Laboratories in 1955 because of a serious, but puzzling nerve disorder which had erupted about 1950. A doctor I had at that time fed me phenobarbital and that nearly flooded me. Even though he stopped doing this rather promptly, the effects lasted for some years, principally being a loss of memory and severe reduction in vitality. This, I think, was partly the cause of my early retirement. By the time I was put on the shelf I had carried the work of growing quartz crystals to the point where it was clearly shown that my process was commercially economical and practical, and we could grow quartz cheaper than it could be imported from Brazil. Largely as a result of the paper I published in the Journal of Industrial and Engineering Chemistry in 1954, the Western Electric Company began to consider seriously the setting up of a commercial plant to produce this crystal for telephone purposes. They now have a million dollar plant at North Andover, Mass., and in the January, 1962, issue of this same journal is an article describing this plant. An editorial comment on this process on the first page of the article: '30,000 p.s.i. For Three Weeks' is as follows: 'The growing of synthetic quartz crystals is so interesting, even to the general public, that probably few subjects in recent years, aside from penicillin and the atom bomb have had as much editorial mileage.' As regards mileage, I have been busy this past year, and my nervous disorder is practically cured. On July 5 I was invited by Professor Alexander Smakula, at M.I.T., to give a talk on my favorite subject, growing quartz crystals, before the International Optical Society, in Paris, France! That was quite a thrill, particularly in view of the fact that the invitation came from my alma mater. The talk made quite a hit, and about a week later I gave the same talk and showed the same movie before a group of engineers at the British General Electric Company at Wembley, England. The movie was made by the Western Electric Company of the new plant at North Andover, and I was given a copy to use as I desired. Then Mrs. Walker and I took a Cooks Tour up through Scotland and got home about the first of August. Who should meet us at the Newark Airport but our son Charles and his wife, who live in Arcadia, Calif. Their presence in the East was a complete surprise. Charles, as you may know, graduated from M.I.T. in '49, in chem-

ical engineering, and now works for the Braun Company designing oil refining equipment and similar engineering things.

"During 1961 I was president of the Millburn Old Guard, a group of 125 retired men. I finished my tenure of office last Thursday and was highly praised for a fine job. Also I am a member of the Summit Old Guard, the parent organization, of 400 members. For several years I have been the unofficial operator of the motion picture projector for monthly movies for both of these organizations. On December 6 I showed the crystal movie before the New York Medical-Surgical Society, at the Hotel Plaza, in New York. I am an honorary member of this group. Because the movie only takes 20 minutes, and I have talked to them twice before on the subject of crystal growth, they asked me to tell them the history of my nervous disorder, now that some very unusual developments have occurred. The talk was well received. This evening I go over to the 'New Eyes for the Needy' a nationally known organization located in Short Hills, and help sort eyeglasses. It is an exciting job, and I have succeeded in getting six members of the Millburn Old Guard to go with me on Monday nights. Eye glasses are sent to this organization from all over the country. Metal frames and old jewelry are sent to a smelter in Newark; result, \$100,000 a year from the precious metals recovered. Plastic glass frames, with lenses in good condition, are sent to representatives in Africa and other similar places where the natives do not have an opportunity to secure glasses locally, and these are tried until a pair is found which fits. This is worthwhile business. If you or your friends have any old glasses send them. Extra lenses are of no value unless they are perfectly round, or are cataract lenses. Well, even though a person is retired, there is much he can do to be useful and pleasantly occupied."

Surely Irving B. McDaniel, '16, has had deep, inner satisfaction all these years in knowing what a superb job he did in creating the Tech Show our freshman year. Knowing that art must be implemented by action, as well as animated by imagination, he gives us a final touch, done with clarity and good taste, by means of the following letter dated "at sea off Pakistan." (It reminds me that **Ed McNally** and I constituted the flute section in the orchestra.) "A rising salute to you, **Bob Means**, and the Class of 1918. Harold F. Dodge, '16, was kind enough to send me your November Class Notes and it certainly brought back a flood of memories. To start a class argument (and I feel certain that Ralph Fletcher, '16, will not agree with me), I think the Class of 1918 contributed more to Tech Show than any other class. I place 1916 second and 1914 tied with 1915 for third. Look at the talent you had. **Earl Collins** (second only to Gershwin) was terrific. When he played his latest compositions for me I would marvel as to how he did it; he looked like a regular engineer. And Clark Robinson, '17, his scenery is equalled today (45 years later) only in Vienna. And the talent in the cast, the chorus and the orchestra! The ponies and the orchestra

were my favorites. I always wanted more exotic orchestrations but our director said nyet. I still love oboes and timpani, especially in a bedouin tent. **Sam Chamberlain**, his lyrics today are as contemporary as the day he wrote them. Does he still wear a different necktie every day? **Walt Frazier**, Joe Gardner, '17, was there anyone in your class that wasn't in the Show? I experienced the same reactions on the Riviera as Bob Means. I always liked him very much and was sorry to read of his death at the end of your class notes. I think you are both right about the lyrics for 'Bathing at Nice.' The original version was as Bob quoted. Someone mentioned water contamination so it was changed to your version. I think the change was made too late to correct the song book. The musical credit for 'Getting A-Cross' should go primarily to Frank Surls, '15. He was second only to Gilbert (or was it Sullivan?). He also looked like a chemical engineer. Weren't his opening choruses and finales marvelous? Do you remember our coach, Sam Hume? He has become famous and for years was in charge of the Greek Theater at Berkeley. We were all privileged to have worked under him. But to me, the greatest privilege I had was to be at M.I.T. at that time and with as clean a group of undergraduates as any campus ever had. Maybe we were kept too busy but I don't think so; it was innate with the entire group. I do hope sometime to make a class reunion in Boston and that I will have the pleasure of seeing you again and finding out how the years have treated you."

How wonderful to look back with pride and satisfaction on the efforts of years that will not come again. Many of us are either retired or retiring now. On January 31 **Walter R. Herfurth** laid down his responsibilities as chief automotive engineer for the United Parcel Service. Despite the fact that M.I.T. groomed him as a naval architect, he designed delivery trucks instead of yachts or battleships. Among other innovations, he played a leading role in the development of reinforced fiberglass bodies for commercial vehicles. Before joining U.P.S., Herfurth was employed at R. H. Macy and Company, where he supervised the procurement, operation and maintenance of the delivery fleet. His association with U.P.S. began in 1946 when the company assumed the department store's deliveries. He is a former president of the Motor Truck Maintenance Club of New York and has served on the Transportation and Maintenance Activity Committee of the Society of Automotive Engineers. No doubt Walt now recalls with pride the bleak student days when he earned his living expenses as an orchestra pianist and as the driver of a sight-seeing bus. Because of the effort involved, some of our finest victories are not recognized till long after the hours of struggle are over. Later, he was an instructor in aircraft engines at M.I.T., and during World War I, served as an engineering officer with the U.S. Naval Air Service.

On January 31 **Benjamin M. Greely** also retired, after 43 years of service with the American Sugar Refining Company.

He had joined the Domino Sugar Division at the old South Boston plant after serving in World War I as a Naval Air Corps pilot. He finished as manager of the new Domino Refinery at Charlestown. In accordance with the time worn and happy custom, Ben was tendered a testimonial banquet as corroborative evidence of his own feeling of having done a good job. . . . Coincidentally, on this same date **William P. Fisher, Jr.**, (chemical engineering) retired after 36 years with DuPont. Bill became a member of the Finishes Sales Department promotion group in 1926. He worked on the development and sale of new products as well as the adaptation of regular products for special industrial requirements. As the years went by he held a series of supervisory positions in sales, based in Chicago, Boston and Wilmington. In 1956 he was made marketing and product manager of the division.

A note from **Pete Sanger** says he met **Clarence Fuller** fleetingly, learning that Clarence is, "sort of semi-retired, but still called in on the tough problems. He always was a master at working them out." In contemplating the careers spanned by these particular notes, the experienced and discerning thinker knows, without being a pessimist, that each of these men (were he to tell frankly what he really feels), would include incidents in which he was not given the credit he deserved. It is true of all of us. On the other hand, and to balance the account, we each receive unexpected recognition which we honestly don't think we deserve. It happened to your secretary when, again in January, he was awarded an honorary life membership by the Boston Chapter of the Society for the Advancement of Management in recognition of his contribution to the field of human relations in industry.—**F. Alexander Magoun**, Secretary, Jaffrey Center, N.H.

'20

Al Burke passed along welcome word from Texas' gift to the Class of '20, **George B. Morgan**. In his letter to Al, George writes: "I am enjoying good health and am conducting many good interviews with prospective M.I.T. undergraduates from the high schools in the Beaumont area. We have a Southeast Texas M.I.T. Alumni Association of which I was president, and there are over 350 M.I.T. men in this area. When we have a meeting, we do well to have 100 present, including wives. I am booked to go to the Rotary International Convention in Los Angeles the early part of June so cannot be present on Alumni Day, but I will probably be up Cambridge way later this year. I finish up my year as governor of this Rotary district on July 1." George says to Al, "I suggest you write your class letters the night before." Wonder what he could possibly mean? . . . **Bunt Murphy's** remark about these notes appearing a lot nearer the front of the section got a rise out of **Dorothea Brownell Rathbone**. Says Dorothea, "I am sort of at the other end of the line once more. The oldest

grandchild, little Dorinda, is coming to spend next winter with me at 24 Kingston Avenue, Providence, while she goes to school here. She will be 15 years old by then, exactly as her mother was in school here a generation ago. Her family now lives in Gales Ferry, Conn., and her father is a nuclear submarine man. There are four more children so this might be the beginning of life again. As Cliff would say, more power to all." And as all of us would say, more power to you, Dorothea!

Latest 1920 achievements include the New England Award of the Engineering Societies of New England to Dean Emeritus **C. Richard Soderberg** and the Oersted Medal of the American Association of Physics Teachers, "for notable contributions to the teaching of physics," to Professor **Francis W. Sears**, Chairman of the Department of Physics at Dartmouth College. Francis, internationally famous for his texts in physics, was cited for his contributions to physics teaching, his inspired leadership of the association and his efforts to improve college education in science. Mentioned also in the citation was his authorship of the three-volume "Principles of Physics." Not long ago his publisher held a reception in his honor on the occasion of the sale of the one-millionth copy of one of his books. His volumes, some written in collaboration with other physicists, have covered mechanics, heat, sound, electricity, magnetism and optics. Increasingly popular in many parts of the world, it is estimated that more than 1,000 colleges and universities have used Professor Sears' books. He taught physics at M.I.T. for more than 30 years. He is a fellow of the American Physical Society, past president and former treasurer of the American Association of Physics Teachers, a member of the Optical Society of America and the American Society for Engineering Education. Last year he received an honorary doctor of science degree from Drexel Institute.

Perk Bugbee was the featured speaker at a recent convention of the American Hospital Association in Chicago. His subject, needless to say, was fire prevention. . . . **Hank Erickson** has left Port Washington, N.Y., for the sunnier clime of Ormond Beach, Fla.; his address is 8 Seaview Drive. . . . Regretfully, I must report the death of **Samuel H. Burr** who was associated with the Schutz-O'Neill Company of New York City. . . . Just as these notes were wrapped up, comes a view of Christianstead Harbor, Virgin Islands, to make us winter-weary stay-at-homes green with envy. The back of the card reads, "Missed **Norrie Abbott** here by three or four days. His name was on the register at Hotel-on-the-Cay. We took the Meteor of Bergen line, San Juan through Leeward and Windward Islands." If you haven't already guessed, it was signed Chuck. Our illustrious Marco Polo of the class, **Chuck Reed**, of course. . . . Please note the new home address of your secretary, just off the main road to Winchester from Medford and only a stone's throw from Perk's. Reason for the move after all these years, was a desire to make living simpler and

easier—all on one floor, for one thing. Come and inspect our new home. The latchstring is always out for 1920 folk. The office address remains the same: Culver Advertising, Inc., 330 Stuart Street, Boston, the former Salada Tea Building and only a step from the Statler-Hilton, Sheraton-Plaza or Ritz-Carlton when you make that trip to see the new Boston and the enormous and exciting expansions at M.I.T. Hope to see you on Alumni Day if not before.—**Harold Bugbee**, Secretary, 21 Everell Road, Winchester, Mass.

'21

A note from Assistant Class Secretary **Ted Steffian** says in part: "On March 31, our present partnership (the Boston architectural firm of Larsen, Steffian, Bradley and Hibbard) is being dissolved for reasons of illness of one and imminent retirement of another partner. I am going back into private practice. The new firm will be known as Edwin T. Steffian and Associates. As of April 1, the new office address is 376 Boylston Street, Boston 16, Mass. I am happy to be able to announce that my older son, John Ames, University of Pennsylvania Fine Arts in Architecture, '57, is joining me and will be carrying some of the load. My younger son, Peter, an architectural graduate of the University of Pennsylvania in '59, will probably join us next year. What more can I ask?" For all of his many friends in the class, we wish Ted the continuing success he so richly deserves and we hope everyone will immediately proceed to direct architectural, construction and design problems to the new address above. No doubt there are many '21ers who are fortunate in having sons or daughters as working members of their firms; we think of **Dinnie Whelan** and his lovely daughter, Anne, and of **Bill Emery** and his sons. It has always been a happy experience, when interviewing young men for entrance to Technology, to contemplate the future of those whose interests have directed their educational preparation towards a part in the family business, and we hope the Admissions Office is tolerant if we have favored candidates under these circumstances. . . . **Walter A. McKim**, Northwest Sales Manager of Reliance Varnish Company, says his mail should be addressed to P. O. Box 246, Florence, Ore. . . . **Leo Mann** reports a move to a new home at 77 Chiswick Road, Brookline 46, Mass. . . . **Arthur W. Morse** writes that his address is Brooklea Farm, King Street, Greenwich, Conn.

With heavy heart we record the passing of three of our members and extend sincerest sympathy to their families on behalf of the entire class. . . . **Everett Russell Tucker**, descendant of an old Ipswich family and the third generation to occupy the family home there, died on January 22, 1962. Born in Ipswich on December 23, 1898, he prepared for Technology at Manning High School, where he was valedictorian of his class. At the Institute, he was a member of the Electrical Engineering Society and a pri-

vate in the S.A.T.C. during World War I. He was graduated with us in Course VI and entered the United States Postal Service. At the time of his retirement in 1957, he was assistant postmaster of the Ipswich post office. An active member and, for a number of years, adjutant of American Legion Post 80, he was also a member of the alumni council of the Christian Endeavor of the Congregational Church and a member of the New England Gladioli Growers Association. He is survived by his wife, the former Anna E. Grant.

Bernard Henry Moran died at his home in Natick, Mass., on February 17, 1962. Born in Natick on February 24, 1899, he prepared for the Institute at Natick High School and was graduated with us in Course II. At Technology, he was a member of the Mechanical Engineering Society, the Catholic Club and Phi Kappa. During World War I, he was a private in the S.A.T.C. unit at M.I.T. He had been associated with the Spray Engineering Company of Boston and then joined the instructing staff of Holy Cross College, where he became professor of physics. During World War II, he was named curriculum specialist and later education officer in the Bureau of Naval Personnel, Washington, with the rank of lieutenant commander. He retired from naval service in 1959. He was a member of the Holy Name Society of St. Patrick's Church, Natick, and the Edward P. Clarke Post of the American Legion. He is survived by two sisters, Miss Mary L. Moran of Natick and Mrs. Dorothy Gelinias of Cohituate, Mass.

Alexander Ernest Halberstadt died in New York City on February 23, 1962. A native of New York, he was graduated with us in Course VI. He began his career as an industrial engineer in Bolivia and Chile and returned to this country in 1931. He had been an industrial engineer with the General Cable Corporation, the Jones Shipbuilding Company and the New England Boat Company. Most recently, he had been general manager of the Flying Tiger Air Line and management engineer of the ABC Freight Forwarding Corporation. He is credited with being a pioneer in the development of containers for long distance freight hauling. His son, Alexander, Jr., of Akron, Ohio, was graduated from Technology in the Class of 1946.

Ollie Bardes and **Romney J. Mellen** continue to push their achievements for the M.I.T. Second Century Fund well above 100 per cent of their respective quotas for Cincinnati and El Paso. This is almost your last chance to raise your own ante and have it swell the total of that Class of 1921 biggest-to-date Class Gift which we made on our 40th anniversary last year and for which the books remain open until some time next month. Come to Alumni Day on campus in Cambridge on June 11, 1962, and join your friends in observing the completion of another in the long list of constructive firsts resulting from 1921's pioneering efforts. Meanwhile, your secretaries need your news. Please write.—**Carole A. Clarke**, Secretary, c/o International Electric Corporation, Route 17 and Garden

State Parkway, Paramus, N. J.; **Edwin T. Steffian**, Assistant Secretary, c/o Edwin T. Steffian and Associates, 376 Boylston Street, Boston 16, Mass.

'22

The one and only concern of this month's Class News is the great event of 1962, the 40th Reunion of the Class of '22! We look forward to seeing all you 'loyal and true' members at the New Ocean House in Swampscott, Mass., June 7-10. Reunion Chairman **Parke D. Appel** and his committee have arranged an interesting and enjoyable program, so let's see you there! And don't forget Alumni Day at the Institute, June 11.—**C. George Dandrow**, Assistant Secretary, Johns-Mansville Corporation, 22 East 40th Street, New York; **Whitworth Ferguson**, Secretary, 333 Ellicott St., Buffalo.

'23

Hugh S. Ferguson, President of National Research Corporation, has been elected a director of Macalaster Bicknell Corporation, Cambridge, a manufacturer of scientific apparatus and science teaching aids. . . . **Harry Kalker**, President of the Sprague Products Company (a subsidiary of the Sprague Electric Company), together with Harold V. May, has been granted a patent on a new type terminal and mounting ring. The ring will permit Sprague's Print-Lok electrolytic capacitors made for the replacement trade to be installed without on-the-spot changes in a wide variety of appliances with different sockets. The May-Kalker invention, the company said, provides a substantially universal terminal and mounting ring that will permit the same capacitors to be used in a wide variety of end products. . . . **Dr. Herman A. Bruson** has been named vice-president and senior scientist at the Organics Division of the Olin Mathieson Chemical Corporation, in New Haven, Conn. Dr. Bruson joined Olin in 1952 as manager of chemical research. A native of Middletown, Ohio, he holds degrees from the Massachusetts Institute of Technology and Technische Hochschule, Zurich, Switzerland, and has received the Chicago Award as one of the 10 outstanding industrial organic chemists of the country. He formerly was vice-president-research of the division. . . . The New York Herald Tribune (February 18, 1962) has an article on "Perlman's Case for Railroads" which went like this: "Suggest to **Alfred E. Perlman** that railroads are a dying industry, then sit back for 10 minutes and listen to a harangue that opens with the mild words, 'I don't think so.' As president of New York Central, he readily admits railroads must change their ways and notes he is doing his best to turn the trick by merging his road with Pennsylvania Railroad, a colossus-sized consolidation that would create the country's 11th largest corporation. But as for the future of railroads, he protests, 'Why, they're our most economical form of trans-

portation.' And age cannot wither their effectiveness, he said, 'Look at what we're doing. We have pushbutton yards with 65-foot analog computers and centralized traffic control. We use radar and microwave. Our technological laboratory in Cleveland is even doing cancer research for the government. People don't know, the public has no idea what's going on with railroads. We've spent \$360 million for improvements since 1954. We're not down at the heels.'"

When the Metropolitan Opera Company opened in Boston glamorous Brenda Lewis sang the title role of "Salome." In real life the star is Mrs. **Benjamin Cooper**. Ben Cooper, of course, is the man who gets the tolls into the tills, having invented the passenger car counter and the automatic collector for toll gates used throughout the country. The Coopers have a luxurious apartment in New York's Hampshire House. But fabulous is the home Cooper designed and built on 100 Westport, Conn., acres. There are two kitchens—His and Hers—for the engineer enjoys the culinary arts. And two swimming pools—one for Ben, Brenda and their tiny daughter Edith, another for neighbors. And a five-acre lake in front of the house is well stocked for friends who drop by for a bit o' fishing. These friends often include famous musicians. So of course, the Coopers have a music room. Cooper has one of the world's greatest collections of rare old violins, including those Stradivarius and Guarneri, which he often loans to musician friends. . . . We wish to report the following address changes: **James E. Brackett**, Apartment 203, 808 Tharp Street, Arlington, Texas; **Lester S. Champion**, 35 Sutton Place, New York 22, N.Y.; **George H. Hurley**, 601 North Ashland Avenue, LaGrange Park, Ill.; **William W. Johnson**, 1840 Pasadena Street, Houston 23, Texas.—**Herbert L. Hayden**, Secretary, c/o E. I. du Pont de Nemours and Company, Leominster, Mass.; **Albert S. Redway**, Assistant Secretary, 47 Deepwood Drive, Hamden 17, Conn.

'24

In March the Phelps Dodge Copper Products Corporation announced that it had a new president, its former executive vice-president, **Edgar P. Dunlaevy**. Ed has been with them since the late '20s in a variety of positions. Guess the only spot left now is chairman of the board. . . . **George Neitlich's** 35 years with Metropolitan Life were suitably recognized in February when a party was thrown in his honor. The report includes a long list of firsts and onlys for George, among them, "he is the only Metropolitan representative in all New England who is currently listed in 'Who's Who in Insurance.'" One of his accomplishments: past president of the American Society of Chartered Life Underwriters.

Recently your secretary ran into **Vincent E. Lysaght** in the corridors. His son, Vincent, Jr., a senior, was escorting him around. Looks like there will be a Lysaght on the student list even after Junior

graduates. Vin's other son, Michael, is planning to transfer to M.I.T. this fall. . . . If your secretary may be permitted a personal social note, his daughter, Joanne, was married on March 10 to Thomas L. Chaffee. The wedding was in the M.I.T. chapel, and no matter what you may think of its architecture, it's the ideal spot for such an affair. **Carl Muckenhaupt** can testify to that, since his daughter was also married there. Tom is head of the English Department at the Berkshire School out in western Massachusetts. He's a magna cum laude graduate of Yale. This is the only way the Kane family will ever be able to include a Phi Beta Kappa in its ranks.

The **Crafts** family continues to make news, with Betty playing in an early Shaw play, "You Never Can Tell," at the Charles Street Playhouse (not on Charles Street) in Boston, and **Griff** being elected a vestryman of Grace Church in New York. . . . **Lloyd Westbrook**, one of our architects, has moved up from New Haven. He's now in Cambridge with Architect's Collaborative, a group headed by famed architect Walter Gropius. . . . We are sorry to have to report the death of **Francis B. Stewart**, who got his doctorate in chemistry with our class. In recent years he has been in Battle Creek as a consultant in chemical and biological warfare to the Civil Defense Administration. . . . Hope to see many of you on June 11 at Alumni Day.—**Henry B. Kane**, Secretary, Room 1-272, M.I.T., Cambridge 39, Mass.

'25

A final report on **Ed Kussmaul's** trip to Tokyo is in order. He left the Boston area on January 24, 1962, and after spending some time in Tokyo, decided to continue westward. He made stops in Hong Kong, Bangkok, Cairo, Athens, Rome, Frankfurt, London and Shannon, returning home on February 23, just in time to attend the February meeting of the Alumni Council. . . . It was hoped that in addition to the regular 1925 members we could have a few more present to see what goes on at these council meetings. In addition to Ed, **Ave Stanton** and I, who are regular members of the Council, **Jim Howard** was able to be with us as well as **George M. Balcom**. Weather conditions were such that I am afraid a few others were prevented from making the meeting. . . . It was pleasant to have a short visit from **Charlie Cooper** who was making one of his regular trips to the Institute in behalf of the DuPont Company. . . . A few days after Charlie's call, another chemical engineer in the person of **Bill Asbury** of Esso Research and Engineering Company, Linden, N.J., was here as a working member of the Visiting Committee of Sponsored Research. It was pleasant to have a classmate on this committee, and Bill contributed much to the two-day meeting.

Recently in the news was information regarding **Arthur F. Merewether**, who received his M.S. degree with the Class of 1925. At the 30th Annual Honors Night

Dinner of the Institute of Aerospace Sciences held at the Hotel Astor in New York City, he was presented with the Losey Award. Among the most coveted by weather analysts and researchers, this award was established by the I.A.S. in 1940 to commemorate the memory of Robert Moffat Losey, an Air Corps captain and meteorological specialist. Arthur is superintendent of meteorology for American Airlines with headquarters in New York City; he was given this award in recognition of his important work in establishing aviation weather services to advance air safety.—**F. L. Foster**, Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

'26

This month's notes will be a bit short because they are being written at arm's length. Somehow, I pinched a nerve in my shoulder and part of the therapy is a pseudo-collar made by winding a large Turkish towel around the neck to keep the head supported. Consequently I can't bend over to see what I'm doing so I'll put together what I can this way. . . . A touching letter from **Eben B. Haskell** has explained his long silence and absence from our 35th Reunion. Mrs. Haskell was seriously ill at the time and succumbed to a long siege with cancer shortly thereafter. Eben has been getting himself organized in the months since and his nice letter to your secretary was most welcome. From the class, Eben, our sincere sympathy. That family of yours, covered in the mimeographed note that you included, is worth telling the class about. I'll just hit the high spots because I want the class to envy you, with me, your fine family. Here's the Haskell family. "Joan was married in our living room to Chuck Vicinus of Rochester, N.Y., on July 20. Marion was able to be present and was magnificent. Chuck is assistant editor of the Antioch Press and a summer theater play director. He is a graduate of Antioch College. Lois left La Paz, Bolivia, in March, 1961, to have her second son, Timothy Allen, here in New Haven on May 8. He is a redheaded darling. My son-in-law, Bill Lenderking, was here last summer for six weeks, but had to leave in August for Tokyo, where he is in the Japanese language school run by the U.S.I.S. Anne gave up her job with the Electronic Data Processing Division of Minneapolis Honeywell in Wellesley Hills and entered Yale University Graduate School this September in the master of arts in teaching program. (In Eben's letter he advised that he had announced Anne's engagement to Lewis Knight, an Amherst boy who is teaching math in the Winchester High School). Judy finished Vassar in June as a music major with a B.A. degree and is sharing an apartment with three other Vassar girls in New York City. Robert, after a serious session with a ruptured appendix which began the night before his mother died, was able to return to Hopkins Grammar School for his last year and go through his season as captain of the soccer team.

I am keeping the house as much as possible like it used to be. I would be happy to hear from any of you, or better still, see you here at any time." Isn't that an enviable family!

An interesting release from American Motors: "**Richard H. Pough**, conservationist of Pelham, N.Y., is announced a winner of the American Motors Conservation Award of \$500 and a bronze plaque. The award, one of 10 given to professional conservationists throughout the nation each year, will be presented to Mr. Pough at a future date." The release goes on to tell of Dick's many activities over the years in the field of conservation, but since most of you know his outstanding record, I'll not repeat it. Continuing, "In a letter congratulating Mr. Pough, George Romney, President of American Motors Corporation, said: 'The awards program was inaugurated in 1953 as a means of publicly recognizing the material and spiritual importance of preserving our renewable natural resources. It is our hope that, as the program continues year by year, it will bring renewed inspiration not only to those receiving the awards, but also to their colleagues in conservation everywhere, and that it will help to focus public thought upon the imperative and continuing need for sound conservation practice'." . . . Here's a clipping I hadn't noticed before about Class President Dave. It's from The New York Times and is accompanied by a most distinguished photograph. "The election of **David A. Shepard**, an Executive Vice-president and a director of the Standard Oil Company (New Jersey), as trustee of the Carnegie Corporation of New York was announced yesterday. The Carnegie Corporation of New York was founded in 1911 by Andrew Carnegie for the advancement and diffusion of knowledge and understanding among the peoples of the United States and the British Commonwealth." The clipping included the fact that Mr. Shepard is a graduate of M.I.T., etc., etc., but I think you know that. Congratulations, Dave! I'm sorry not to be able to ramble on a bit but the ramblings have to be written at arm's length as stated above so I'll save the anecdotes until next month and cheerio! —**George Warren Smith**, c/o E. I. du Pont de Nemours and Company, 140 Federal Street, Boston, Mass.

'27

Before you read these notes you will have received **Glenn Jackson's** announcement of the 35th Reunion, and we are counting on a good time and a good attendance. If you haven't sent in your registration, do it today. I bumped into **Bill Taggart** at Miami Airport yesterday and he, of course, is planning to be at the reunion. . . . We were very glad to hear from **George Houston** recently with some news to report about himself. He mentioned that he was moving to Boston on March 1 to start a new job with Northeastern University Center for Continuing Education; also, that he is planning to be at the reunion in June. Attached to his

note was a brochure prepared by his publishers, Richard D. Irwin, Inc., Homewood, Ill., describing his new book, "Manager Development: Principles and Perspectives," a recent addition to the Irwin Series in Management. George brings to this book a penetrating analysis of the problems involved in the education and training of business managers, drawn extensively from his own experience during long association with E.I. du Pont de Nemours and Company and the General Electric Company. He is a member of the American Management Association and the American Society of Training Directors.

We regret to advise that **Roger Putnam Vaughan**, son of **Paul S. Vaughan**, was killed at Newport, R.I. He was serving with the United States Navy, and was enrolled as a freshman to begin studies at Boston University. . . . The following was received from **Bob Wallace**: "Here we go again. After a short six months in Cleveland the company decided that they wanted me to take over the position of director of engineering at the Lansing Division, the White Motor Company, so here I am now transplanted to Lansing, Mich. My wife and I are enjoying it here very much and are looking forward to seeing the ground which has been well covered with snow ever since we have been here. We are fairly well off a beaten path in Lansing, but should you ever get out this way please drop in to see me." . . . The following new addresses have been received: **Richard Cutts, Jr.**, 1001 Seminole Road, Scotia, N.Y.; and **Roger L. Nowland**, the Nowland Organization, Inc., King Street, Greenwich, Conn.—**J. S. Harris**, Secretary, Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

'28

From the morning edition of the Boston Globe for February 21, 1962, we have learned that our classmate, **Bill Hall**, was chosen to be the first recipient of a new title, "Consulting Scientist" at Raytheon Company. This is one of three new titles of distinction created by Raytheon by which an outstanding scientist or engineer of the staff might be honored and recognized for his work. Bill, who studied in Course VI-C, received his bachelor's, master's, and doctor's degrees at the Institute. He has been with Raytheon for 21 years. Congratulations, Bill, with our admiration and best wishes! . . . Florence and **Ralph Jope** received a note from **George Bernat's** wife, Ruth, in Sarasota, Fla., with news of the Bernat family. George has gone back into business after a retirement of three years. The Bernats took a trip around the world recently to celebrate their 25th wedding anniversary and were accompanied by their older son, Eliot. Eliot has degrees from both Harvard and Northwestern and is now having a wonderful time working for General Electric Company in Chicago. Son Robert is very busy as a student at Wharton School in Philadelphia. Florence, herself, is home after a lengthy hospital visit and

back operation for a ruptured disc. Her recovery is slow but she is progressing very well.

Your assistant secretary had the good fortune to spend a most enjoyable evening with **Ham (Thomas S.) Bacon** and his charming and gracious wife, Frances, during a recent visit to Dallas, Texas. Ham is vice-president in charge of research at Lone Star Gas Company. They are looking forward to a plane trip in June that will take them on a three-week vacation to Sao Paulo, Brazil. There are four young Bacons: Carolyn is a graduate of William and Mary College in Virginia and is now working in Washington on the staff of Bruce Alger, congressman from Texas. Tommy is in his fourth year at the University of Houston where his study emphasis is in economic subjects. John, who is now 16 and a junior in high school, is more technically inclined; he likes chemistry and motors. David, the youngest, is 13 and still in junior high school; his interest is in speech-art subjects. The whole family enjoys outdoor life and went vacationing several years ago in the Adirondack Mountains. At home they have an outboard power boat for fun on nearby lakes.

We are sorry to report that **Stuart Currier** died in the hospital on January 15 after a brief illness. Stuart was manager of engineering services of the Communications Division of International Telephone and Telegraph Company, Federal Division, Clifton, N.J. His home was in Maplewood, N. J.—**Walter J. Smith**, Assistant Secretary, 15 Acorn Park, Cambridge, Mass.; **George I. Chatfield**, Secretary, 11 Winfield Avenue, Harrison, N. Y.

'29

From out of the past comes **C. J. (Jack) Custer**, who, we find, has been with Bell Laboratories since graduation in 1929. Jack now lives in Andover, Mass., and is with the Merrimack Valley Bell Labs. He seems to have run the full gamut of assignments, starting out on aircraft radio receiving equipment. In 1938 he transferred to the Transmission Systems Department where he was concerned with measuring equipment for television transmission and the L1 carrier. During World War II he worked on proximity fuses and radar and after that was assigned to work on pilot regulators for the L3 coaxial systems and on the development of submarine cables and more recently on TI radar relay systems. Jack is presently engaged in work on the TL radar relaying systems. He is a member of the I.R.E. From reading his article in the Bell Laboratories Record, I am amazed at the tricks that the electronic engineer can do these days. . . . **Bill Whiting** has made himself quite a reputation as a fire protection engineer with the N.E.F.I.R.A. Bill recently spoke to the Society of Fire Protection Engineers on the spectacular Revere Sugar fire in Boston.

We have had news that **Jose (Joe) Ferrer, Jr.** died on February 13 in New York. Also, Mrs. Olivette **Crosby** died late in February. I want to express the

heartfelt sympathy of the entire Class to Joe's family and to **Tacks (Ralph)**. Tacks is with Shell Oil, 50 West 50th Street, New York 20, N.Y.—**Fisher Hills**, Assistant Secretary, 62 Whittemore Avenue, Cambridge 40, Mass.

'30

We have at hand a report that **Irving M. Dow** retired from the post of chief engineer of the Naval Weapons Plant in Washington as of the end of 1961. His very interesting and impressive terminal project took him to the South Pacific where he installed a 24-inch, f/5.0 photographic telescope with "digital automatic control (receives signal from computer located 9 miles distant over microwave cable)." In designing and building the control system for this telescope he was assisted by three men who have recently completed graduate work at M.I.T.—**Clarence Cantor**, '59, Peter Hui, '61, and Carol D. McBiles, '60. Irving's son, Lansing, is in the Class of '63 at Benjamin Franklin University, majoring in accounting. His daughter, Letitia, graduated from F.S.U. last June with a B.S. in interior design. He reports having recently seen **David Landen** at a meeting of the Washington Society of Engineers. Dave is with the Interior Department's Geological Survey. . . . **Arthur (Jumbo) Griffith** is assistant district sales manager of the East Orange, N. J., office of Lukens Steel Company but still a resident of Schenectady. His daughter, Virginia, graduated from Smith in 1960 and is now a Danforth fellow at Columbia working toward an M.A. in music. Son Arthur is in the Class of '63 at Yale, majoring in history with an eye on a law career. . . . **Bill Griffith, Jr.**, is a consulting engineer in Tucson. His older son, Bill, 3rd graduated from University of Arizona and is now a rancher with a son Bill, 4th, and a daughter, Katy. Younger son, Charles, is a graduate student at University of Arizona. Bill, Jr., is an honorary secretary and member of the M.I.T. Educational Council. He reports that "Tucson is a wonderful place to visit as well as live" and that he "hopes to see some of you out here one of these days." . . . **Don Harrison** is Union Carbide's general patent counsel and lives in Green's Farms, Conn. His daughter, Margaret (Mrs. C. M. Case), attended Smith and the University of Chicago. Son John is a student at the Guntery in Washington, Conn. . . . **John Scheuren** recently received an award from the Department of the Army for his work on military installations in the Arctic regions. Two projects mentioned were construction of the Ballistic Missile Early Warning System at Thule, Greenland, and extension of the DEW line across Greenland. John is presently director of operations for the David Nassif Company of Boston. . . . Changes of address: Colonel **Angelo Ricciardelli**, Comm. Elect. Division, Headquarters USEUCOM, APO 128 New York; **Saul Sigel**, 300 North Adams St., Manchester, N. H.—**Gordon K. Lister**, Secretary, 530 Fifth Avenue, New York

36, N. Y.; **Ralph W. Peters**, Assistant Secretary, 249 Hollywood Avenue, Rochester, N. Y.; **Louise Hall**, Assistant Secretary, Box 6636, College Station, Durham, N. C.

'33

Congratulations to **George P. Bentley**, XVI, for his election to the vice-presidency of Kollmorgen Corporation. George, who had been associated with Waltham Watch and with Sperry, founded Instrument Development Labs, which merged several months ago with Kollmorgen. . . . Through the good offices of **Beau Whitton**, we have several pictures of **George Wrigley's** new building in Greenville, S.C., which was opened officially in late February. George is president of J. E. Serrine, architects and engineers. . . . Come next fall, **William D. Murphy** returns to the greater Boston area as a teacher in the Lynn High School. Bill has been teaching at Staunton Military Academy for two years, following his retirement from the Army. . . . Three moves of consequence; let's have the details, boys: **Harry W. Gabar**, VI, from MacLean, Va., to San Mateo, Calif.; **Norman P. Spofford**, I-A, from Hamilton, Ohio, to the interesting sounding town of King of Prussia, Pa.; and **Julio C. Ulloa**, VI, from Cuba to Fort Lauderdale, Fla. The latter move is understandable; the whole class joins in the hope that Hoolie can return home someday soon. . . . When you come back to campus for Alumni Day, June 11, you will find that **Bill Barbours** has been working hard on the banquet and entertainment committee. Make your plans now; we need your help in making plans for our 30th year hence.—**R. M. Kimball**, Secretary, Room 7-206, M.I.T., Cambridge 39, Mass.

'34

I am sorry that many of our class notes are reported so belatedly. This is a concern of every class secretary and is due to difficulties of communication well beyond the requirement of a two months lead time for the printing of The Review. Late or not, we are spurred to continued efforts by the realization that quite a number of the items in which classmates (and other readers) are interested are learned about for the first time through these columns. . . . Although the event was well publicized in the Boston area, others will be pleased to learn that **Norman B. Krim** has become president of the Radio Shack Corporation in Boston. The Radio Shack is well known to all those who work or tinker with radios, record players, sound systems and similar electronic devices. He resigned from his position as vice-president of the Raytheon Company last October at the time his appointment became effective. The following notes are excerpts from a newspaper account: "Mr. Krim joined Raytheon in 1935. From 1948 through 1958 he was responsible for Raytheon's sales,

manufacturing and engineering of distributor products, receiving tubes, semi-conductors, industrial tubes and cathode ray tubes. He founded Raytheon's industrial tube and semi-conductor divisions. He holds five United States patents on subminiature tubes. Since 1958, Mr. Krim played an important part in the Machlett Laboratories acquisition, formed Raytheon's Japanese joint venture in addition to corporate studies in Argentina, Brazil, India and Italy. On Tuesday evening, November 7 at the Weston Country Club over 200 Raytheon employees paid tribute to Mr. and Mrs. Krim. They have three sons."

A very brief note from **Ed Nowell** to **Mal Stevens** in February disclosed that Ed had been bedridden since last summer with a liver virus. This is a terrible blow to one who is usually active in many ways. I hope that by the time this is printed his condition will be much improved, but maybe some of you fellows who live nearby could do some checking. Ed lives at 29 Crescent Road, Winchester, Mass. (telephone PA 9-0196). . . . The appointment of **Cassius C. Belden** as manager of employee and public relations of the Dominion Bridge Company was announced in January by the company president. He has been with the company since 1959 having previously been associated with Industrial Relations Counselors, Inc., and its Canadian subsidiary for 15 years. He is located at the head office of the company in Montreal. . . . A notice from the Alumni Office states that **William B. O'Brien** died last year. He had been director of chemical research for the Dodge Chemical Company in Cambridge, Mass. . . . **Hal Reynolds**, who is president of the firm of Reynolds and Halliday, was reported as the speaker at the February meeting of the Western Massachusetts Chapter, American Society of Heating, Refrigerating and Air Conditioning Engineers. His topic was, "Advances in the Design and Application of Draft Inductors."

Henry Kaweck's company (the Kaweck Chemical Company) in Boyertown, Pa., continues to make splashes in the news. They have now formed a joint enterprise in the Netherlands to process tantalum and columbium. Sheet and foil rolling mills as well as a tantalum anode manufacturing plant are scheduled for construction this year at Arnheim under the new company's name, N.V. Kaweck-Billiton Metaalindustrie. . . . In case you were wondering what **Dave Ingalls** is doing (other than world-travelling) since he sold Airtron, Inc., it is now reliably reported that he has become vice-president and director of Talley Industries, Inc. Initially he is attached to Talley's subsidiary company, Microtech, Inc., in Cheshire, Conn., where he will be involved in the company's overall marketing and production activities. . . . Last month **Jim Eder** reported to you on a newspaper clipping covering my appointment as vice-president of International Nickel's Huntington Alloy Products Division. This has required my relocation to the company's executive offices in New York after more than 25 years in Huntington, W.Va. As of March 1 we took possession of a

new home at 44 Deepwood Road, Darien, Conn. While there is truly much to be said of the comforts and joys of living in West Virginia, I am looking forward to many new opportunities including the increased likelihood of meeting and sharing experiences with former classmates. —**G. K. Crosby**, 44 Deepwood Road, Darien Conn.; **H. E. Thayer**, 415 W. Jackson Road, Webster Groves 19, Mo.; **Malcolm S. Stevens**, P.O. Box 93, West Barrington, R.I.; **J. P. Eder**, 1 Lockwood Road, Riverside, Conn., Co-Secretaries.

'35

We can expect some more news from the midwest relatively soon as the direct result of **Elmer D. Szantay's** tremendous letter writing. Four district secretaries and eight great Chicago classmates. To each of his district secretaries he sent copies of suggested letters they write to the classmates in their areas. This we have direct from Elmer: "Not much to say except that I have had lots of legal troubles the last few years. I obtained a divorce from my wife last year and obtained custody of my five daughters, Ruth and Rita (twins), 12, Ann, 14, Kathryn, 15, and Margaret, 16. We are maintaining our same home with a housekeeper and a cook. So, everything was neglected: my secretarial work, my golf, and to some extent my business. Now I am looking forward to a peaceful future in which I can keep all things on an even keel for smooth sailing. I don't sail, I fly. I am flying to Fort Lauderdale tomorrow morning in my Bonanza. I will return to Chicago next Sunday. Four days in the sun. I fly down about every two weeks for a four- or five-day stay. My daughters go along on school holidays.

"Our business volume is excellent but competition has been very keen; such that profit margins are far below what they should be. Sometimes we find that we are only handling money with no remainder. I am coming East in June in my plane with my oldest daughter. We are going to visit several colleges including Wellesley and Smith. Perhaps you and I can have a golf game at that time." That we shall plan to do and possibly have two more local '35ers make up a foursome. In the meantime we shall look forward to seeing the results of your efforts in the future notes.

After reading **Walter Stockmayer's** letter in the February notes we felt you would be interested in reading some excerpts from an article in the January, 1961, issue of the Dartmouth Alumni magazine entitled "Teacher-Scholar-Mountaineer." It says: "Walter Hugh Stockmayer is one of America's distinguished physical chemists. Until last spring he was comfortably ensconced as a full professor at a distinguished institution that was also his alma mater, the Massachusetts Institute of Technology. Today he is professor of chemistry at Dartmouth, and his reasons for moving tell you some things about the man, but a great deal more about what's happening in the sciences at Dartmouth. The

story involves a chance meeting with a Dartmouth Medical School professor, a visit to two of his former teachers who are now in Hanover, a love for the mountains and finally and most to the point an opportunity he saw at the college to participate in an exciting new teaching and research program. Dartmouth is delighted he's here, of course, and with reason. Professor Stockmayer has an impressive list of credentials.

"When Provost Morrison of Dartmouth died, Professor Stockmayer wrote Professor John Wolfenden of the Chemistry Department expressing his sympathy and later visited Hanover to see Professors Wolfenden and Francis Sears. He had known both as a student. He had attended Wolfenden's lectures at Oxford and had taken courses from Sears at M.I.T. Professor Stockmayer was and is an avid mountain lover. He helps write the White Mountain Guide of the Appalachian Mountain Club and is a charter member of the 4,000-footer Club composed of those who have climbed all 46 of the 4,000-foot mountains in New Hampshire. His wife and two teen-aged sons are also interested in these sports. The opportunity to live in the center of hiking and skiing country was very attractive. But scientists don't live by pleasant surroundings alone. They work best with the stimulus of interesting students, interesting colleagues, and interesting research. Professor Stockmayer explained some of his views recently in his cluttered, no-nonsense office just across from one of the student chemistry labs in Steele Hall. 'I've always enjoyed teaching undergraduates and getting to know them personally,' he said. This feeling for teaching is reflected in effectiveness. In 1960 the Manufacturing Chemists Association cited him for 'outstanding performance' as a teacher. The award was one of six the association made nationally. 'Education,' he continued, 'especially in the natural sciences, must change as the times change and knowledge changes. If your grandfather wasn't interested in the sciences he could avoid them and not suffer. Today everyone must have some grasp of scientific concepts to be effective in almost any endeavor.' Professor Stockmayer's principal research interests are macromolecules (according to Webster, 'large molecules or a grouping or combination of simple molecules capable of independent existence.')

"The Stockmayers are now subleasing an apartment in Hanover while building a hilltop home in Norwich. Their new home will have a spectacular view of the Connecticut River Valley and the surrounding mountains. The road up the hill has recently been improved, but the house still is not too accessible and during the winter months with the snow piled deep . . . ? But, what's a little snow to the skiing, mountain-climbing Stockmayers?" It's pretty obvious the Stockmayers and Dartmouth are mutually happy.

Among the address changes is one for **Ham Dow** moving from Braintree to 1518 Union Street, Schnectady 9, N.Y. He was district secretary for the South Shore and is now hereby appointed district secre-

tary for the eastern half of upper New York state. . . . Other news from here and there: **Dr. George E. Valley, Jr.**, Professor of Physics at M.I.T., has been named a consultant in research for the Sprague Electric Company. Dr. Valley is best known for the SAGE system which he conceived and for which he directed the development. . . . **Bissell Alderman's** firm was recently appointed architects for the new main office of the Springfield Institution for Savings (Mass.). . . . **Ed Edgar** has been more out of the country than in since taking on added responsibilities at Gilbert Associates. We hope his recent trips to Japan, the Philippines and Korea will be detailed in an early letter. . . . **George P. Knapp** is now with the Mount Hope Machinery Company of Taunton. He was formerly director of engineering at the Sanborn Company. . . . **Leo Beckwith** and **Allan Mowatt** were guests of their respective sales managers at a recent luncheon of the sales and marketing executives of Greater Boston. **Henry F. King** and **Robert W. Forster** are also members. . . . **Paul W. Daley** is the president of All-Steel Equipment, Inc., Aurora, Ill., the organization in which he only admitted to being an engineer in our reunion notes. . . . **Bill Abramowitz**, chairman of class drive for the Second Century Fund, advises we are up to \$530,000 as of February 18 in our goal to double **Rufus Applegarth's** gift of \$300,000. . . . Last call for the second annual golf tourney! If you wish to play, contact **Arthur Marquardt** immediately by telephone, Area Code 617, DA 6-3580 home, and CE 8-2011 office. Let us hear from you anyway.—**Allen Q. Mowatt**, Secretary, 11 Castle Road, Lexington 73, Mass.; Regional Secretaries: **Edward C. Edgar**, Kerry Lane, Chappaqua, N. Y.; **Hal L. Bemis**, 510 Avonwood Road, Haverford, Pa.; **Elmer D. Szantay**, 6130 North Kilbourn Avenue, Chicago 16, Ill.; and **Gerald C. Rich**, 673 Rosita Avenue, Los Altos, Calif.

'36

The mailbag this month contains an even larger than usual number of address changes. **Sidney Baum** has moved from Fitchburg, Mass., to 17001 Mooncrest Drive, Encino, Calif. . . . **Ronald E. Beckman** has also moved to California from Marblehead. His address is 200 Ellery Place, San Pedro. . . . **Norman A. Cocke, Jr.**, has moved more south than west from Ridgewood, N.J., to 865 Tall Oaks Road, Radnor, Pa. . . . The Alumni Register gives a new address for **H. Page Cross** as 770 Lexington Avenue, New York 21; and for **Al Klemka** (Dr. **Albert J.**) as 7431 Valley View Road, Hudson, Ohio. . . . **Dr. Brockway McMillan** has moved to 2524-44th Street, N.W., Washington 7, D.C., from Summit, N.J. . . . Finally **Joseph W. Neily's** new address in Catonsville, Md., is 13 Tanglewood Road. . . . Other news is brief: **Dorian Shainin** spoke on "The Pursuit of Facts" at a meeting of the American Production and Inventory Control Society, Boston Chapter, in January and **T. N.**

Mitropoulos was chairman of a joint A.I.-E.E.-I.R.E. meeting on instrumentation held on January 16. Maybe I need Dorian's help in "the pursuit of facts" for this column. How about it, all of you?—**Alice H. Kimball**, Secretary, 20 Everett Avenue, Winchester, Mass.

'37

The class book has been put to bed at the printers, the registrations for our 25th Reunion have been received, plans are made, Tech is ready and we are waiting for June 9, 10, 11. There is still time to send in your registration, but hurry, hurry. . . . **Gordon B. Wilkes, Jr.**, has spent 25 years with General Electric, Small Aircraft Engines, in Lynn, Mass. He has been manager of the component test department, advanced turbine design and repair engineering. At present, Gordon is president of the Lynnfield Historical Society and is a member of the School Plant Planning Committee. . . . **Fred Claffee** is traveling in Europe and South America as manager of compensation and employee benefits for E. I. du Pont de Nemours and Company. . . . **Dick Westfall** is now with Grocery Store Products Company, West Chester, Pa. . . . **Gil Mott** has recently been named vice-president of manufacturing for the Bridgeport Brass Company. He joined Bridgeport Brass after graduation and has been vice-president of Engineering since 1958. . . . We just received a letter from **Ralph B. Chapin** in which he gave a most interesting account of his trip to the Far East. Ralph will be at our reunion with his wife, Sanna, their son and youngest daughter. It will be interesting to hear first hand of their experiences in such places as Formosa, Thailand, Cambodia, Nepal, etc.—**Robert H. Thorson**, Secretary, 506 Riverside Avenue, Medford, Mass.; **S. Curtis Powell**, Assistant Secretary, Room 5-323, M.I.T., Cambridge, Mass.; **Jerome E. Salny**, Assistant Secretary, Egbert Hill, Morristown, N.J.

'39

Two separate sources give information on **Richard S. Leghorn's** activities as the famous president of the famous ITEK Corporation. First, I'll extract key ideas from a special report in The Christian Science Monitor of February 13 entitled "Private Approach to Aid." Dick and his executive vice-president, Franklin A. Lindsay, formerly of McKinsey and Company, a New York management consulting firm, studied the former British colony of Sierra Leone in West Africa to see if the systems management techniques used by American industry could be applied practically to the economic development of a newly emerging nation. Instead of various and often unrelated assistance ventures, both public and private—which at best constitute a piecemeal approach in tackling broad development problems—a better co-ordinated, more compre-

hensive, balanced program is planned. Leghorn and Lindsay favor the creation of a private corporation into which could be brought together management experts, technical planners, and representatives of public and private financial interests throughout the free world. By using techniques similar to those used successfully in the United States to produce completed weapons systems on time, Dick feels that economic development projects can be carried out effectively. "What we need is a combined business-government approach capable of doing what neither public nor private institutions can do alone. Why give nations money unless they have sound and workable programs to put it to good use?"

Dick's other news was that ground was broken recently (simultaneously) for two new Itek facilities. One new building is being built in the Northwest Industrial Park in Burlington, Mass., for Itek Electro-Products Company. This new plant will produce crystal filters and instrumentation. Among other items, the new plant will produce IF pre-selectors, which are being supplied to Bell Laboratories for use in the upcoming A. T. & T. communications satellite. The Itek Electro-Products division also supplies the crystal filters used in the TIROS weather satellites. The second of the two construction projects consists of a pair of buildings added to the Itek Palo Alto-Vidya, Inc., complex in Stanford Industrial Park, Palo Alto, Calif. These buildings will provide space for research related to aerospace problems in hypersonic flight and high temperature physics.

Here's a tip for other classmates: take a tip from Itek, and get your public relations officer to put me on his mailing list, or else send directly to The Review office. As you can easily see, this technique is a gold-mine for a news-hungry class secretary as well as helping to spread the good word about a company's progress.—**Oswald Stewart**, Secretary, 31 Birch Road, Darien, Conn.

'40

Poetry, even bad poetry, apparently gets results. From **Dave Sunstein** comes the following news: "In response to your comments re postcards: (1) My son, Bruce, was admitted to Tech this past fall by either a lax, an aggressive or a knowing admissions office. His high school principal suggested he leave high school after junior year, which he did. He has his mother's brains, so he did very well the first term, thereby justifying the admissions office venture. He thinks he will be a math type, or physics student. (2) General Atronics, which I've been associated with for the past six years, recently bought Electron Tube Corporation and now we are in special purpose cathode ray tube, oscilloscope, and recording camera fields, in addition to former General Atronics fields." . . . **Karl L. Feters** has been elected president of the Metallurgical Society of the American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc. Karl is vice-president for research and de-

velopment of the Youngstown Sheet and Tube Company. . . . **Ed Seim** has been appointed general manager of the Micarta division of Westinghouse Electric Corporation. Previously, he was in charge of the Hampton, S.C., plant of Westinghouse.

From **Russ Haden** comes news of **Henry Rapoport**. Rap is a professor of chemistry at the University of California where he has been since 1946. He started as instructor and advanced to assistant professor in 1948, associate professor in 1953 and full professor in 1957. Rap held a Guggenheim fellowship in 1955 and was a DuPont lecturer in 1957. He also was a lecturer in the American Chemical Society North Jersey Section's Heterocyclic Chemistry Series in 1960, and is on the editorial board of *Index Chemicus*.—**Alvin Gutttag**, Secretary, Cushman, Darby and Cushman, American Security Building, Washington 5, D.C.; **Samuel A. Goldblith**, Assistant Secretary, Department of Food Technology, M.I.T., Cambridge, Mass.

'41

In the impressive news about our class members this month is the announcement that **Dr. Stanley Backer**, Associate Professor of Textiles at M.I.T., has become the 13th recipient of the Harold DeWitt Smith Memorial Medal given by Committee D-13 of the American Society for Testing and Materials. This medal is awarded annually for very outstanding achievement in the science of textile fiber utilization. Stan received this high award on Thursday, March 1, 1962, at the Sheraton-Atlantic Hotel in New York City at the Spring Meeting of Committee D-13. The presentation was made by Dr. Herbert F. Schiefer of the National Bureau of Standards, who is chairman of Committee D-13 and was the first recipient of this award in 1950. The Smith Gold Medal, established and endowed by Fabrics Research Laboratories, Inc., of Dedham, Mass., is awarded in memory of Dr. Harold DeWitt Smith, who pioneered in the engineering approach to evaluation and utilization of textile fiber properties.

Stan received the degrees of B.S. in business and engineering in 1941, in textile technology in 1948, and an Sc.D. in mechanical engineering in 1953, all at M.I.T. His professional career began in 1941 as a research assistant in textiles with the U.S. Army Quartermaster as a second lieutenant. His brilliant services were recognized with frequent promotions and he attained the rank of major by the end of World War II. In 1946 he continued in the employ of the Army Quartermaster as a civilian and head of textile materials engineering, having previously organized the first textile research laboratory for the quartermaster in Philadelphia. In 1949 the academic atmosphere lured him back to M.I.T. to continue his graduate studies and to pursue his work—teaching, textile research, lecturing and advisory services to his colleagues and country. He organized and taught graduate courses in textile engi-

neering analysis and textile research techniques at M.I.T. He has directed and taught special summer programs for industry personnel at M.I.T. in the fields of mechanics of textile structures, impact behavior of textiles, and techniques in textile research. He organized the first course in the United States in parachute technology in 1955 and has taught in subsequent courses in this field at Purdue University, University of Minnesota, and at M.I.T. He was exchange lecturer at Imperial College, London, England, 1952-53.

Since 1955 Stan has been in charge of industry and government sponsored textile research activities at M.I.T. In addition he has served as graduate registration officer for the Textile Division for six years, and more recently as undergraduate registration officer for the Mechanical Engineering Department. His outstanding services at M.I.T. have been recognized by promotion to assistant professor in 1951 and to associate professor of mechanical engineering in 1955. Among Stan's contributions to textile science are three U.S. patents and 20 papers dealing with many aspects of fiber-yarn-fabric interactions, fiber, yarn and fabric properties; yarn and fabric geometry. He has contributed generously of his time and talents to the government. He is serving as chairman of the National Academy of Sciences, National Research Council ad hoc Committee on Textile Research, and N.S.S.—N.R.C., Quartermaster Advisory Board, Committee on Textile Fabrics. He is serving as a member of N.A.S.—N.R.C., Q.A.B., Committee on Body Armor and as a public member for Massachusetts on the New England Governors Textile Committee. Stan is a member and past-president of the Fiber Society, vice-president of the National Council for Textile Education, and is a member of the Advisory Committee for Textile Engineering of A.S.M.E., Technical Advisory Council of A.A.T.T., Editorial Committee for the Journal of Engineering Education of the American Society for Engineering Education, fellow of the British Textile Institute, Rheology Society, and Institute of Textile Science of Canada. He was elected to the honorary societies of Sigma Xi and Tau Beta Pi. He lives at 5 Irving Road, Waban 68, Mass., with his wife, the former Ester S. Ross, and their children, Richard K. and Jonathan M. In his spare time he is busy with his hobbies: reading, sailing, fishing, and carpentry.

Howard J. Samuels, the man with the Midas touch in polyethylene products, is president of the Kordite Company. . . . **Frank S. Wyle**, president of Wyle Laboratories, El Segundo, Calif., has announced the acquisition of Liberty Electronics Corporation and two affiliated companies, Flight Electronics Supply Corporation and Atlas Electronics, Inc., in exchange for an undisclosed amount of Wyle stock. Liberty and Flight are in Inglewood, Calif., and Atlas is in San Diego. The acquisition will add approximately \$5,000,000 to Wyle's annual sales volume, Frank's announcement said.

Victor Karel Wagner, Jr., was recently married to Kathleen O'Malley Clark of

Brielle, N.J. After a honeymoon in Mexico, the couple will reside in Longmeadow, Mass. Victor is president of the Springfield Wire and Tinsel Company. . . . Information for insertion in this column should be sent to one of the secretaries.—**Walter J. Kreske**, Secretary, 53 State Street, Boston, Mass.; **Henry Avery**, Assistant Secretary, 169 Mohawk Drive, Pittsburgh 28, Pa.; **Everett R. Ackerson**, Assistant Secretary, 16 Vernon Street, South Braintree 85, Mass.

'42

With six inches of ice in our driveway, two feet of snow piled up where we shovel the excess to, and unbreakable crust in the backyard, it is a little difficult to visualize the balmy breezes that should be blowing when you will be reading this report. The Rosenblums returned to New England and Belmont and got the heating system in this 50-year-old house in order just in time for more snow than ski country needs and more cold weather that we aging folks find invigorating. With 11 big rooms, an attic and a large basement there is more than enough room for Laurie's and Bruce's toys, Sandy's piano and large collection of music, and my file of 20 years of The Technology Review, Technique, Vu, an assortment of photographic equipment, and the usual collection of scientific journals and files. It's good to be back in New England and it's good to be back in engineering (we are ignoring, but only until we get settled, such serious community issues as the Massachusetts highway scandals). My work at the Itek Laboratories is in the supervision of design and fabrication of complex optical systems. The most entrancing projects are, unfortunately, classified, but some of the talkable ones include equipment for Project VELA, the world-wide network of seismological recording stations. A recent proposal specified field examination of a representative sample of stations. Time will tell how much beyond Weston, Fordham, Washington, Texas and Michigan this project will take me. For spare time activities I continue to watch closely the dramatic investment opportunities in growth companies, and I am continuing my development work on the use of optical imaging and switching circuit control for high-speed high-quality typesetting machines for Hindi and other non-Latin-based writing forms.

This column is not ordinarily open to commercials, but there is a new magazine of unusually great appeal to those people who follow international affairs. "Atlas" reprints, translating into English when necessary, pertinent articles from the publications of more than 100 countries. Some are flattering to us, some justly critical, a few wholly distasteful and an occasional one preposterous. This one-year-old monthly journal is valuable in that it makes available in undigested and unedited form what is read, and often believed by millions of people from Peking to Pretoria to Paris. . . . In a recent reorganization of the Strathmore Paper

Company, a subsidiary of the Hammermill Paper Company, **Peter G. Volanakis** was promoted to vice-president. As reported some time ago Pete has been with Strathmore in West Springfield, Mass., since 1946 as chief chemist, manager of technical paper sales and most recently as administrative assistant to the president. . . . At a meeting of the Reunion Committee, **Jack Sheetz** reported that **Frank Hutchinson** has been appointed chairman of the biophysics department at Yale. . . . At the risk of sounding repetitive we repeat that our 20th Reunion will start on Friday June 8. Any class member wanting more details is encouraged, if the mailings haven't reached him, to wire me collect.

William F. Watkins has been elected vice-president, operations, of the United States Salvage Association. This organization reports on damage to, and carries out inspections of, vessels and other structures for marine underwriters, ship-owners and others in all countries. Prior to joining U.S. Salvage in 1949 William was with Gibbs and Cox as a marine engineer. . . . **Dr. George J. Yevick** has (fearlessly, we trust) been giving public talks on the controversial subject, "Brave New World of Underground Shelters." George received his S.B. in physics with us, was on the staff of the Radiation Laboratory and later took his Ph.D. at the Institute. His wife, Miriam, was in the Class of '45, also in physics. She later switched to mathematics for her Ph.D. at the Institute. George joined the Physics Department of Stevens Institute of Technology in 1947. The Yevicks live in New York City. . . . We find that the subject of possible nuclear attack and the protection from radioactive fallout leaves most people, including many of our classmates, rather bored. There are, however, a significant number in our class who have expert knowledge in the field and who are dismayed at the mass of misinformation and the unwise statements by some public figures on this subject. While fallout seems like too serious a subject for a holiday weekend at the Mayflower Hotel, those who want some first hand information can certainly buttonhole and get sound information from George Yevick, Frank Hutchinson, **Marty Levene** and several others. . . . Your secretaries look forward to seeing all of you, your wives and each other at reunion, Friday to Sunday, June 8-10, Mayflower Hotel, Plymouth, Mass.—**Lou Rosenblum**, Secretary, 24 Cedar Road, Belmont 78, Mass.; Regional Secretaries: **J. J. Quinn** from the West Coast; **Ed Edmunds** from the Southwest; **Bob Keating** now from the mid-Atlantic states.

'43

A mid-winter reunion of our class was held in San Juan, Puerto Rico, on Friday evening, March 2, and I am happy to report that all active members of our class (and their wives) then present in Puerto Rico attended. Your secretary and his wife were most graciously entertained that evening, and for that matter, during

our entire stay in San Juan by **Angel M. Gonzalez, XVII**, and **Tony Del Valle, II**, and their lovely wives, Ani and Carmen, respectively. Both of these men are general contractors; Angel is with Miramar Construction Company, Inc., and Tony is with Rodriguez and Del Valle, Inc. Although both of them have visited the continent during the past years, they were very eager for news about our class, and were happy to hear that plans for our 20th Reunion are in progress. I assured Tony that all those he inquired of, including Frank Swenson, Jim Ingham, Greg Azarian, Hap Hosley, George Marakas, Tom Dolan, Tom Bennett, and many others, would in all probability be at the Mayflower Hotel in June of 1963. One of the highlights of my visit was a day spent with Angel, accompanying him on a business trip in a chartered light plane around the whole island, and visiting the housing project he is constructing in the southwest section of Puerto Rico. Both of these gentlemen have been active in public housing construction, of which there is a great deal on that island. Tony has also done some major commercial construction work. Another highlight was a day spent driving in the country in the eastern mountain area, arranged through the generosity of Senor Del Valle, who made his car and chauffeur available to us during our stay.

Tony and Carmen live in a beautiful home in the suburban San Patricio section of San Juan; they have two sons and two daughters. They have traveled extensively, and their home includes many items made in Spain and France. Angel and Ani, who have four boys and a girl, live in the Miramar section of San Juan on a street predominantly occupied by the homes of his many brothers and sisters. Although Spanish is the language of that island, all of their older children speak English fluently, as of course, do their parents. It was a rich and rewarding experience to visit these classmates and to observe the great progress in culture and industry which their country has achieved.

Dr. **Arch C. Scurlock**, who received his master's degree with our class, is president of Greater Washington Industrial Investments, Inc., of Washington, D.C., a firm which invests primarily in established companies operating in those fields of technology which hold promise of exceptional future growth. Recent investments announced by Dr. Scurlock have been \$70,000 to Norwood Studios, Inc., a leading producer of nontheatrical motion pictures, and \$200,000 to Mt. Vernon Research Company of Alexandria, Va. . . . **James B. Reswick** is director of the Engineering Design Center at Case Institute of Technology in Cleveland. His center recently received grants totalling \$99,000 from the Office of Vocational Rehabilitation of the Department of Health, Education and Welfare to continue its unique co-operative program in medical engineering. . . . **John McMul-lin**, who is with the research laboratory of the Crucible Steel Company of America, in Pittsburgh, has been named chairman of the Pittsburgh YMCA's new Metropolitan Aquatic Committee, which will

seek to upgrade all aquatic instruction and increase participation in the Y's aquatic program. John has taught life-saving and diving courses at the Y for many years as an extra-curricular interest. . . . **George Marakas**, who was mentioned in the March issue of these notes, has moved from Ohio to Pennsylvania, where his offices are c/o Le Blond Machine Tool Company, the Benson East, Room 204, Jenkintown, Pa. . . . **Hank Tiedemann** has moved from New Hyde Park, New York to Cherry Valley Road, Greenwich, Conn. Hank, as you may recall, is a consultant in the shipping industry.

The Puerto Rico reunion mentioned at the beginning of these notes is the first of a series of regional meetings of our classmates which are being planned prior to the 20th Reunion in June of 1963. You will be hearing of these meetings sometime after this coming summer. In the meantime, it is not too late to start writing to your class secretary with news about yourself so that we won't be strangers at the big affair in 1963.—**Richard M. Feingold**, Secretary, 10 North Main Street, West Hartford 7, Conn.; Assistant Secretaries: **Christian J. Matthew** and **John W. McDonough, Jr.**

2-'44

At the end of last month's notes I indicated that I expected to be able to tell you about the joining of 2-'44 and 10-'44. Well, I have kept my ear to the ground since writing those notes, but there haven't been any murmurs, so as of the moment there is nothing more to report. . . . Last week, I went out to Cincinnati, and had a chance to call up a couple of the fellows. I talked briefly to **Bill Pugh, XV**, who said that he was hard at work in his own printing business. I called at a bad time, as he was doing some homework on some labor negotiations, and Bill reports that their family now includes a girl 2½ years and a boy 1½ years old. Also called **Ed Jones, VI**, who is heading up research activities at Baldwin Piano. He is doing some of his development work on a computer rented from G.E. Gas Turbine plant in Evendale. Ed and Phyllis have five children ranging in age from 4 to 11. Phyllis, who is the real source of this information, said that last summer the Jones's took a real holiday, and started by going to Block Island, R.I. On the trip home they took the southern route, and stopped in Washington, D.C., Sherokee, N.C., and Knoxville, Tenn., before they arrived home. Ed's avocation of music has led him to install a pipe organ in their home, and Phyllis advises that Ed plays it quite well, and the children are coming along also.

A couple of weeks ago I had lunch with **Bob Benedict, XIII**, in New York. We went to a fish restaurant, and were reminded a bit of the Union Oyster House. Bob was getting ready to make a trip to Pakistan where he had some company business. He was going to be gone for two weeks, and he advised that it was really a good thing to get away this

time of the year, as winter was getting a bit too much. Bob, all I can say is that your method does seem a little drastic! . . . Bob passed along a note he had received from **Jack Taft, XIII**. Jack is with Bethlehem Shipbuilding at Quincy, and lives in Duxbury with Mary and five children, aged 5 to 14. He is now engaged in a design project involving the propulsion plant of a submarine. Jack had recently had lunch with **Jim Mavor, XIII**, who is living in Wayland and working at Woods Hole. Jack had also recently seen **Andy Vallone** who is working in nuclear power engineering at the Portsmouth N. H., Navy yard.

A nice note from **Bernie Rabinowitz, X**, with the announcement of the arrival of their fourth child. The family lives in Nutley N. J., near Bernie's plant in Passaic. Bernie advises that the product is dyestuffs, intermediates, and other organic chemicals. Atlantic Chemical Company, the parent organization, recently sold off their growing plastics plant, and are now in hot pursuit of new ventures. It's a pleasure to pass along such news to the class! . . . An article in the Press Herald of Portland, Maine, gives some news of **Lester Simon, II**, who resides in New York and is with R. A. Ransom Company. Lester is closely associated with hearings before the Federal Power Commission to bring natural gas to the Portland Area. I suspect that Lester has more than a passing interest in this matter, since he originally came from Portland, and probably knows at first hand what this will mean to the residents of the area. . . . That about winds this one up. I certainly do appreciate some of you fellows sitting down and dropping me a note, as in that way I can pass the good news along.—**P. M. Heilman**, Secretary, Reflectone Electronics, Inc., Stamford, Conn.

10-'44

Here in Pittsburgh we see quite a few Alumni but strangely none seem to be from our own class. One outcome is that the news sources are rather slim, and it takes such means as the exchange of Christmas greetings to get material to report. Should any of you be in this district, stop by and pass along whatever information you've got. . . . We did learn from **Scott Carpenter** by means of year-end greetings that he has been up to his ears in the Second Century Fund campaign and that his wife, Barb, has kept busy while he has been on this task by managing the school library in Hingham. "The moral is," Scott says, ". . . move every few years." (Scott, I'll change places with you. We're finished moving.) . . . Ray Wilding-White, '45, reports from Cleveland, where he has been appointed to the faculty of the Case Institute of Technology. Ray is teaching music and history, and is conducting the Case Glee Club. We also deduce that he is continuing to write music for voice and for orchestra, and continuing to hope, I imagine, that his work will be performed frequently. . . . Clara **Quisenberry** re-

ports that **George** is still training springer spaniels to improve his pheasant hunting performance in the San Francisco area.

It would not be hard to name the person associated with this class who has been in the financial news most frequently in the past year. He is **Clint Murchison**, whose successful effort in collaboration with his brother to gain control of the Allegheny Corporation was one of the main business stories of last year. Clint's financial interests extend far beyond Allegheny, of course, but it is this financial organization that controls the New York Central Railroad and Investors Diversified Services, Inc., the latter among the largest mutual fund complexes in the country. . . . In the world of engineering and science one name that we encounter regularly is that of **Henry M. Paynter**, a member of the mechanical engineering faculty at M.I.T. At last count he had authored over 40 technical papers, primarily in computer applications, automatic control, and systems engineering. He is director of the analog computing laboratory. . . . Sales executive **Pete Quattrocchi** is again making news, this time with his appointment as vice-president in charge of sales for the consumer products division of **Fasco Industries, Inc.**, Rochester, N.Y.

Last in this brief but overdue report are some additions to the ranks of those who have recently been on the move. There is **Bernie Duffy**, from Winnetka, Ill., to Shawnee Mission, Kansas. (That sounds like an unusual place.) And also from Illinois to Kansas. **Jim Hield**—Peoria to Leawood. And **Jack L. Uretsky** from West Lafayette, Ind., to the Argonne National Laboratories in Lemont, Ill. **Al Van Rennes** made the move from Cambridge to Paris to join the European office of the Bendix Corporation. Finally Commander **John Woolston** is now stationed in Washington and living in Arlington, having left New Hampshire where he was associated with the construction of nuclear submarines at the Portsmouth Naval Shipyard.—**Kenneth G. Scheid**, Secretary, Carnegie Institute of Technology, Pittsburgh 13, Pa.

Please excuse my brevity but these notes are being dictated to my secretary in New York from a hotel here in Washington as I attempt to make the mid-March deadline! . . . All of you will join **Dave Trageser** and me in extending the class' deepest sympathy to Dick McManus' family. **Richard L. McManus**, a marketing employee at General Electric's Lynn works, passed on January 18. All of us remember Dick's extreme interest in both the 515 Club and Newman Club during his undergraduate days. As I recall, Dick was president of both these organizations one time or another during his undergraduate days. Not only does Dick leave his charming wife, Barbara M. (Clapp), but also a son, Richard, and a daughter, Karen A.

In a recent issue we noted that **Waite H. Stephenson, Jr.** had relocated in An-

chorage, Alaska. An A. T. O. gossip sheet indicates that **Waite** is manager of contract administration for R.C.A.'s White Alice project, which is the operation and maintenance of a military communications network throughout Alaska. He will be in Alaska three to five years and will then be reassigned to the mainland. The same informant reports that **Jerry Lott** has moved his office to 42nd Street in New York and, further, reports that Jerry has been recently elected chairman of the Films and Foils Materials Committee of the National Packaging Institute. . . . You ex-V-12ers may be interested to know that our old PT instructor, **Chuck Cherundolo**, former Penn State star and for 12 years an assistant coach with the Pittsburgh Steelers, has joined the Philadelphia Eagles coaching staff. . . . Dr. **Oliver G. Selfridge** of the Lincoln Laboratory spoke on "Pattern-Recognition in Computers at an M.I.T. Computation Center Seminar back in early December. . . . We also note that **James E. Gallagher** has been elected vice-president and director of programming of the Geophysics Corporation of America.

In the course of my SCF activity in Fairfield County I had an opportunity to spend a most pleasant afternoon with classmate **Elaine Bickford Bart** and her husband, **Roger**, '46, who is research director at West Virginia Pulp and Paper Company. The Barts have a nice new home up in one of the hills in Weston, Conn., and have what I guess is the average Tech family, three children: boy, girl, boy—ages 9, 6 and 4. Elaine continues her interest in science, having taught science in the local elementary schools for some five years and, I believe, she expects to take this chore on again next fall. . . . **Nick Mumford** of Chance Vought, Dallas, was in New York last week and **Frannie** and I had the good fortune of entertaining Nick for dinner. Nick seems to be on the road about two weeks a month and spends his time anywhere between Boston and San Francisco. In fact, Nick was hoping to see **Vince** and **Bobbie Butler** out in San Francisco within 48 hours of the time he had dinner with us. . . . **Binghamton, N.Y.**, has been a regular layover stop for me on several recent Mohawk flights and each time I can talk with **Jerry Patterson**. Jerry and Lib continue to be most active in local community affairs, and as I recall Jerry is about to perform in one of the local Thespian enterprises! . . . It has been a mighty wet spring, but you guys and gals have been dry! How about springing for Springer!—**C. H. Springer**, Secretary, Firemen's Mutual Insurance Company, 420 Lexington Avenue, New York 17, N.Y.

'48

Now that spring is here, we find the following members of the '48 class have made progress in their respective fields of work. **Norman S. Zimbel** has been named head of the MITRE Corporation's Computer Systems sub-department. In his new post he will be responsible for de-

velopments in the area of advanced computer technology applicable to command and control systems. . . . Announcement was recently made of the appointment of **James B. Morris, Jr.** to the position of superintendent of engineering of the Bridgeport Brass Company. . . . I hope you all are enjoying the spring, and please continue to keep the school informed of news items appropriate for future issues of The Review.—**Richard H. Harris**, Secretary, 26 South Street, Grafton, Mass.; **Harry G. Jones**, Assistant Secretary, 94 Oregon Avenue, Bronxville 8, N.Y.; **Herbert Kindler**, Assistant Secretary, 128 Elatan Drive, Pittsburgh, Pa.; **Robert R. Mott**, Assistant Secretary, Box 113, Hebron, Maine.

'49

Following the very short column in April, we have nearly two dozen news notes on hand. The first dozen came from the ATO News Letter and are quoted here for the edification of the non-ATO readers of The Review. **Fred Adams**, '50, reports that he is now a partner at Fellheimer and Wagner in New York. . . . **Bill Atkinson** has a new son, **David**, who was born on June 25, 1960. . . . **Carl Clark** has started out fresh as of October 28, 1961, for as of that date he had a new job, a new house, and lives in a new city. He is now chief engineer of the Electro Tec Corporation in Ormand Beach, Fla. He reports he has been very busy, as we can well imagine; and that he has a home for sale in St. Petersburg, Fla., so get your prospects in early! . . . **Randy Cleworth** writes that the "kids are getting bigger, and the house is looking a little like an art gallery from local shows." . . . **Bill Estes** is continuing to perform two jobs. He is president of Midwest Grain Company, and manager of the local office of Manpower, Inc. . . . **Bob Griggs** is still working in Puerto Rico, but has been able to visit the United States more frequently since the advent of jets. He managed to get back 15 times during the last 12 months, including a trip to Michigan in June to put his daughter, **Linda**, in Interlochen Music Camp for the summer. . . . **Jan Hoegfeldt** has recently been very busy with his job as metallurgist at Haynes Stellite. He is also busy as vice-chairman, Purdue Chapter, American Society for Metals; and is a member of the producers committee of the technical council of the Society for Non-Destructive Testing; and secretary of the Union Carbide Non-Destructive Testing group. He spoke before the mid-Indiana Society for Non-Destructive Testing last February. . . . **Wally Hyde** has a new daughter, **Carol Sue**, born on May 24, 1961. This sent him looking for a bigger house, and he bought a "five bedroom shanty in Poverty Gulch, home of the nouveau poor." He is now assistant to the technical director at Donner Scientific, concerned with new product development. . . . **Ed Kerwin** co-authored a paper on vibration damping at the spring meeting of the Acoustical Society of America in Philadelphia. Last summer

he spent a fine week with the whole family camping out in Chelsea, Vt., with a big assist from Ed Battey, '48, and Jean. He reports that the ATO house is in pretty good shape. One of the active members is dating an interior decorator type who acted as consultant in color selection.

Bob Krudener is now a director of the Shakespeare Company in Kalamazoo.

... **Bill Raich** was in Chicago for the A.C.S. meeting in September. While there, he had a visit with **Warren Barr**, who looks just like he did in 1949. Bill's job is now as a chemist, doing research on polyolefins. ... **Bill Wilson's** family now numbers five, with son, David, born June 17. Bill, as manager of System Modeling Simulation and Analysis at G.E. Missile and Space Vehicle Department, has met Carl Clark and Don Walker, '50.

... **Carroll E. Adams, Jr., M.S.,** Course I, has been promoted to the rank of lieutenant colonel in the Army Corps of Engineers. He is now serving as executive officer for the Titan I Directorate of the Corps of Engineers Ballistic Missile Construction Office at Torrance, Calif. ...

Kemon P. Taschioglou, Course VI, is now director of technical liaison for Image Instruments, Inc., Newton, Mass. He was formerly industrial sales manager for Polaroid. In addition to the degree from M.I.T., Kemon holds a master's degree from the Harvard Business School. ...

Van T. Boughton, Jr., M.S., Course X-A, has been appointed manufacturing manager of the New England plants producing organic chemicals for Dewey and Almy Chemical Division, W. R. Grace and Company. He will be in charge of organic chemicals production facilities at plants in Acton and Cambridge, Mass. He joined Dewey and Almy in 1949, serving successively as development manager at the Adams, Mass., plant and assistant manager and manager of the Process Development Department at Cambridge. Since 1959 he has been plant manager for Dewey and Almy's Container and Chemical Specialties Division.

The MITRE Corporation in Bedford, sends news of two '49ers: **David L. Bailey, Course VI-A,** has been named associate head of the Air Traffic Control Department. He will be responsible for various phases of air traffic control study and experimentation that MITRE is conducting for the Federal Aviation Agency.

... **David R. Israel, Course VI,** has been named technical director heading the Systems Engineering Directorate. His responsibilities include MITRE's efforts on the SAGE continental air defense system, the NORAD COC, and air traffic control studies. ... **Robert L. Podell, Course VIII,** rejoined the staff at Sperry Gyroscope in Great Neck, Long Island in November as a senior engineer. He also holds an M.S. degree in electrical engineering from Columbia University. From the Institute comes an announcement that **Raymond F. Baddour, Ph.D., Course X,** is serving as chairman of the M.I.T. Red Cross Blood Drive for 1962. ... From the Harvard Business School, we hear that **Paul E. Seeley, Course VIII,** Manager, advanced techniques of the Aerospace Communications and Controls Division of the Radio Corporation of Amer-

ica, has been selected to participate in a "Program for Management Development." This program brings young executives with 5 to 10 years experience back into the classroom on a full-time basis for several months. ... St. Regis Paper Company announces the appointment of **Dr. Ivar H. Stockel, Course II,** as associate manager of research at the St. Regis Technical Center at West Nyack, N.J. Dr. Stockel will be responsible for technical activities in rheology, systems control, and statistical and computer services. Prior to joining St. Regis in 1956, he served as an instructor at the U.S. Naval Postgraduate School.

From the Opinion Research Corporation comes a biographical sketch of **Leonard F. Newton, Course XV,** as follows: "As a research executive for Opinion Research Corporation from 1956 to the present, he devotes about half of his time to the development of new business. He also directs the research undertaken for his accounts, which include Chase Manhattan Bank, New Jersey Bell Telephone, Pennsylvania Power and Light, American Express, The Martin-Marietta Corporation, National Distillers and Chemical, Smith Kline and French, South Penn Oil. During 1959-60, Mr. Newton served as the state president of the New Jersey Junior Chamber of Commerce, during which time it grew 31 percent in membership and more than doubled its budget. He holds a degree from M.I.T. in industrial engineering and, prior to joining O.R.C., was engaged in sales contact and public relations for a management consulting firm. Mr. Newton was born in Bradford, Pa."—**Frank T. Hulswit, Secretary, 14 Nadine Rd., Saxonville, Mass.**

'50

This month I really have the spring spirit so I am not doing any work, but I want at least to say hello to you in our column. And to encourage all of you to do the same to me. **Lloyd M. Licher** has started the ball rolling on the type of letter that I shall be expecting to receive from all of you this year. "Dear Gabe: It wasn't a New Year's resolution to write you, but I've been meaning to send in some information for the class news column and what better way to start off 1962! I left the engineering profession in 1957 when the opportunity came to work at my hobby. I was hired by the Soaring Society of America, Inc., as their first executive secretary and one of my chief responsibilities is the editing of their monthly journal, Soaring magazine. I certainly have never regretted leaving engineering as I knew it in big industry. My wife, the former Rose Marie Pratt, was in the graduate Class of '51 at M.I.T. She worked as an aerodynamicist for Douglas and Hughes full time until the children came, then part time until last year when she gave it up to become my assistant. So our lives center around the sport of soaring, as you can see. It's infectious. Sincerely, Lloyd M. Licher."

Also, here's an example of Lloyd's work. "New Year's Day was spent away

from home, the main object being to fly our Schweizer 1-7 utility glider at Elsinore, Calif., 85 miles to the southeast. We each had a number of unspectacular flights during the two days there. While within easy striking distance, the boys were taken to see the 200-inch telescope on nearby Mount Palomar one morning. To continue with soaring activity, Lloyd gave flight instructions for a local glider club one more time in January before resigning from that type of activity because of lack of time. In February he entered the annual Torrey Pines soaring contest with the 1-7 again, placing 17th out of 39 and only third in his specialty, the bomb drop event. A week later the 1-7 was sold to permit the purchase of a higher performance (glide ratio of 23 to 1) Schweizer 1-26 single-place sailplane in partnership with a friend. After a number of local outings with it, we took it to a 1-26 one-design regatta near San Francisco where Lloyd won the spot landing contest and made a 17-mile cross-country flight. Next time out locally, Rose Marie had a shot at some decent soaring weather, staying up 75 minutes and gaining over 400 feet to earn her C Badge and the altitude leg of the Silver Soaring badge. Then on July 9, Lloyd had everything in his favor and reeled off a 200-mile flight from El Mirage Field, near Adelanto, Calif., to a predesignated goal at Yucca, Ariz., to earn the distance leg of his Gold Diamond badge. The only unhappy thing about the flight was the landing. He hit some unseen power lines with the vertical tail, bending it enough to require replacement and shorting out all power to Yucca for an hour."

Bob Miller was appointed group leader of the Chemstrand Research Center, Inc., in North Carolina. Bob joins Chemstrand from the Plastics Division of Monsanto Chemical Company, Springfield, Mass., where he has performed special research work in the structure of semi-crystalline polymers. At Chemstrand Research his group will be involved in similar studies of fiber-forming and related polymer structures. He and Mrs. Miller and their son, Robert, Jr., make their home at 110 Heater Road in Cary, N.C. ... **Claus G. Manasse**, who was working for CEIR, a data processing and mathematical research firm, is now with the I.T.T. Data Processing Center at International Electric Corporation, in Paramus, N.J. ... **Al Hinckley** of Beverly, a former Marlboro resident, has been named publicity chairman for the New England region of the American Association of Textile Chemists and Colorists. After Al's graduation, he was employed by Metal Hydrides, Inc., where he is now in charge of chemical research. Al recently lectured at the Philadelphia College of Pharmacy on "Recent Developments in Organic Synthesis Using Metal Hydrides." Al and his wife, Yvonne, have five children.

And now I have some address changes that may be of interest to you: Major **Thomas J. Agnor, Jr.,** Rock Island Arsenal, Rock Island, Ill.; **John E. Anderson,** 1042 Timber Lane, Indianapolis 60, Ind.; **Eric E. Anschuetz,** 26 Turning Mill Road, Lexington 73, Mass.; **John Y. Barry,** 1813 St. Marks Place, Fairfax, Va.; **Beynon**

Blanchard, 377 Ronald Drive, Fairfield, Conn.; **Henry M. Butler**, RD #3, Valencia, Pa.; **Norman B. Champ, Jr.**, Round Hill Road, Greenwich, Conn.; **Henry A. Dalton**, 2145 Webster Street, Palo Alto, Calif.; **Alphonse J. Dell' Isola**, 50 Walnut Street, Lynnfield, Mass.; **Raymond V. Dyba**, 230 Potomac Road, Fairfax, Wilmington 3, Del.; **John J. Earshen**, Cornell Aero Lab., Buffalo 2, N.Y.; **Frank J. Finnegan**, 14 Holly Drive, Syosset, N.Y.; **H. Gordon Fromm**, 399 Ski Trail, Smoke Rise, Butler, N.J.; **Maurice Kunstenaar**, 50 Riverside Drive, New York 24, N.Y.; **Rene G. Lamadrid**, 5224 Elliot Road, Washington 16, D. C.; **Gerald A. Lessells**, 1631 Gregory Avenue, Decatur, Ill.; Professor **Carl F. Long**, 211 York Street, West Haven 16, Conn.; Professor **Fred J. Lorenzen, Jr.**, University of Arizona, Department of Mathematics, Tucson, Ariz.; **John W. MacDonald**, 500 South 6th Street, Missoula, Mont.; **Myles Maxfield**, University of Southern California, Hancock Foundation, Los Angeles 7, Calif.; Captain **Stanley R. Meeken, Jr.**, 714 Stone Street, Rockville, Md.; **Richard L. Mehan**, 680 Mallard Road, Wayne, Pa.; **James W. Murray, Jr.**, Brown Engineers of Liberia, P.O. Box 340, Monrovia, Liberia; **William E. Rogers, Jr.**, 1002 W. Nevada Street, Urbana, Ill.; **Richard A. Stephan**, Bucheneggstr, Stallikow-Dagerst/3H Switzerland; **Robert T. Thurston**, 307 Lansdown Road, Dewitt 14, N.Y.; **Robert E. Wilson**, 115 North Chestnut Street, Westfield, N.J.; **David D. Woodbridge**, Apt. 106, 1835 Stevens Forest Drive, Dallas 8, Texas. . . . And that is about it for now.—**Gabriel N. Stilian**, American Management Association, 1515 Broadway, New York, N. Y.

'53

Perhaps "no news is good news" but not for class secretaries! Do take the time and trouble to scribble a note for your classmates, please. . . . Classmate **Frank Scherb** was fortunate enough to have attended the International Conference on Cosmic Rays and the Earth Storm which was held in Kyoto, Japan, last fall. He is now working for the Laboratory for Nuclear Science and the Department of Physics here at M.I.T. and was co-author of a paper on "Direct Observations of the Interplanetary Plasma." . . . **Lawrence G. Rubin** recently was a guest speaker at the joint A.I.E.E.—I.R.E. Meeting on Instrumentation; his topic was "Instrumentation Problems in Industrial Research Programs." . . . **Jon Van Winkle** reports a move from Pittsfield, Mass., to Schenectady, N.Y.; presumably he is still working for General Electric. . . . And, **Betty Ann Ferguson Lehmann** is looking forward to the spring arrival of her third youngster. From the looks of things, Papa Fred is holding up admirably, all things considered!

We received a letter from **Janet and Mort Grosser** which gives as she puts it, "a brief account of our fortunes since graduation, in the hope that others will follow our example." Let me include the letter in full: "We were married two

weeks after graduation (we had become engaged in December of senior year), and honeymooned around the United States for the next two months, mostly camping. In September of 1953, we returned to M.I.T. to work for master's degrees, for which we had been granted a graduate fellowship. We both received S.M. degrees from the textile division of the Mechanical Engineering Department in the summer of 1954. Mort was (we thought) draft eligible, so we took interim jobs in adjacent labs of the M.I.T. Biology Department.

"For the next two years I worked as an engineer at Cleveite Transistor Products; most of my time was spent doing X-ray and optical studies of semiconductor crystals. After three disillusioned months with Raytheon, Mort came over to Cleveite as a design engineer, and designed many of their crystal furnaces. Although we worked in a congenial group at Cleveite, we became steadily less enchanted with industry, and began planning to leave. In autumn of 1957 we sold most of our household furnishings and came west to Menlo Park, Calif., and in January of 1958, Mort began work on his Ph.D. at Stanford in (of all things) history, primarily history of science. I had long been interested in enamelling and ceramics (during our senior year at M.I.T. we had pooled our date money and used it to take lessons in enamelling), and I began working full time and selling my work while Mort was at Stanford. We spent the spring of 1960 in Europe traveling and collecting source material for Mort's dissertation, and he received his doctorate in January, 1961. Our son Adam was born in the same month.

We're now living in Los Angeles and loathing it. Mort has a post-doctoral fellowship at U.C.L.A., and though there are many good positions available here, we will probably move back up north next summer. That's about all we have to report, except perhaps current work. The baby keeps me fully occupied, although I'm taking some courses in anticipation of going back to work. Mort is writing full time, and has published a number of papers and reviews in various journals. His first book, "The Discovery of Neptune," will be published late this year by Harvard, and his first try at fiction, a story entitled "The Loom," will appear in the New Yorker in the autumn. That sums things up; I hope it compensates for all those years of neglect." Thank you very kindly, Jan and Mort.—**Martin Wohl**, Secretary, Room 1-131, M.I.T., Cambridge, Mass.

'56

A recent letter from **John M. Ross** indicated that he is working on his Ph.D. nights at the University of Pennsylvania while working at the Princeton Research Labs of Columbia Carbon. John has a son, Ralph, named in memory of **Ralph Gelman**. . . . **Hal Becker** and family recently moved to Las Vegas for the duration of the present nuclear test series. **Gordon Kane** is also assigned to the proj-

ect. Both work for Edgerton, Germerhausen, and Grier. . . . **Ray Bowen** has received his Sc.D. from the University of California at Berkeley. Ray and Priscilla have two children, Ray Jr., and Sandra. . . . **Peter C. Calcaterra** is with Barry-Wright in Watertown. . . . Lieutenant **Tom Cleaver** is at the Air University at Maxwell AFB, Ala. . . . **Irving B. Elman** is with Copper Products Development Association, Inc., in the Time-Life Building, New York City. . . . **Bob and Joan Malster** announce the birth of a daughter, Susan Elizabeth, on February 1. . . . **Ben Novins** is out of the Navy and now employed by Raytheon in the Boston area. . . . **Dr. Robert E. Porter, Jr.**, is at Glasgow AFB, Mont.

A recent get-together in the beautiful home of **Mickey and Rhea Reiss** included **Herb** and **Carol Amster**, **Bill** and **Ilene Grinker**, **Ira** and **Rochelle Polevoy**. Ira is in his surgeon residency at Beth Israel this year and will be at Albert Einstein next year. . . . Those of you who read the Wall Street Journal might have seen the front page article about Christmas cards last December 22. But how many realized that Yankee Artists of Keene, N.H. was **Chris Booras** and his brother Peter? They manufacture Christmas cards from South American silkwood and produced five million last year. Their customer list includes N.B.C. and U.S. Plywood.—**Bruce B. Bredehoff**, Secretary, 1094 Center Street, Newton Center 59, Mass.

'57

Well, it's only one month to the Class Reunion and your lazy secretary is sitting with better than 150 letters from classmates, none of which he's answered. Let me give you brief excerpts from them. . . . **Mike and Elsa Brenner** enclose a birth announcement of their daughter, Deborah Ann, 4 pounds 10 ounces, January 21, 1962. . . . **Joel H. Schiffman** is an M.D. . . . **Fritz Herminghaus** sent his class dues from Geneva, Switzerland. . . . **Sandy Bernhard** writes: "Thanks to a combination of happy events, Martha and I will be able to come to the reunion this summer. I got out of the Navy (just after getting a promotion to full lieutenant, which hurt) in time to start Harvard Law School last September and Martha is teaching school in Lexington. . . . **Bill Bowman** is studying for his doctorate at the University of California at Berkeley. . . . **Bob Rosin** writes: "Right now I'm about one year away from a Ph.D. in communication sciences at the University of Michigan." . . . **Bill Alcorn** is an M.I.T. assistant professor in charge this year of the Bayway Practice School of Chemical Engineering. . . . **John** and **Carol Marsland** write: "Looks like we can't make it next June; we're expecting our second child that weekend. (You'll have to think of a better excuse than that!) Our first was a boy, David Ely Marsland, born on Memorial Day, 1960. In spring of 1960 I started my present job as a senior process engineer with Naugatuck Chemical Division of U.S.

Rubber. I finished my master's at Tech in February, 1959, and worked with Bristol Meyers in Syracuse from 1958 to 1960. I was on the team that developed synthetic penicillin in November, 1959. My wife Carol graduated with honors from Syracuse in 1959." . . . **Otis F. Bryan, Jr.**, airplane watcher, writes: "I would tear myself away from my radar scope on Spain's Riviera but duty calls. So, have a good time at the reunion." . . . To the **Herbert Hellers**, a son, Richard Eliot, was born October 15. . . . **Don Arnush** is at the Max Plank Institute, Munich.

The Reunion Committee reports that all plans for our affair on June 9 and 10 are go. Response to this point has been excellent but there is still time to make your reservation if you haven't already done so. Just send your six dollars per person deposit to **Gary Dischel**, our Reunion Chairman. Gary would like to answer some questions which have been popping up: 1) Are stags really welcome? By all means, yes. We expect quite a sizable stag group. 2) Will it be possible for people who cannot come for the whole weekend to attend just some events? The answer to this is that while we certainly encourage everybody who can make the entire weekend to do so, it is also possible for those who can attend only certain events such as the cocktail party, banquet and dance on Saturday, or the clambake on Sunday to do so on a split or reduced fee basis. 3) Questions concerning transportation to the Mayflower have been received. Consequently, plans are being made to help arrange a form of locomotion to and from Plymouth for anybody who needs assistance. 4) Finally in response to inquiries about arriving at the Mayflower Friday afternoon or earlier and making a longer weekend of it—there will definitely be a group of us up there Friday and we'd love some more company. So send in all registration fees, reservations, questions and requests to the Reunion Committee, in care of Gary J. Dischel, Hotel Corporation of America, 464 Commonwealth Avenue, Boston 15, Mass. Your committee desires and intends to accommodate you to the fullest. See you at the Mayflower!—**Alan M. May**, Secretary, 201 East 66th Street, New York 21, N.Y.; **Martin R. Forsberg**, Assistant Secretary, 11 Scottsfield Road, Allston 34, Mass.

'59

First, let me bring you up to date on **Bob Muh**'s activities. From Boston, Bob went to Los Angeles and then to Tokyo. After a short stay in Tokyo he then went to Nagoya, Japan. His itinerary from there was Hong Kong, a return trip to Japan, and then Tel Aviv. One of his letters indicates a short stop in Thailand and a visit with **Adul Pinsuvana** who is in the air force there. Apparently Bob is enjoying the trip and I'm sure he'll communicate the more poetic details in the next issue. . . . We received a letter from **Kent Kresa** which brings us up to date on his activities and those of other '59ers in the Boston area. After graduation,

Kent went to work for AVCO and returned to M.I.T. in 1961 to receive his M.S. in aeronautical engineering. In November, Kent married the former Joyce McBride from Bayside, N.J. About other '59ers Kent writes: "**Greg Hofmann** continued in the aero department and received his M.S. in '60. Upon graduation he continued at the Instrumentation Lab and is still there. In September he married Carol Kellerman of Philadelphia and is expecting an offspring in June. . . . **Charlie Baker** is back from Boeing, Seattle, and is working at AVCO. **Bill Van Tassell** received his M.S. in Aero in June and is also working at AVCO. Bill and Charlie have a house in Andover and sport a Corvette and 190 SL respectively. . . . **Jim Poor** is also living in Andover and is working at MITRE."

Kent also mentioned that **Ollie Phillips** and **Steve Osten** are still at M.I.T. Ollie is getting his M.S. this year and Steve is working on his doctoral thesis in nuclear engineering. . . . **Al Engels** is presently in Los Angeles with his bride. . . . Many thanks for the letter, Kent. . . . A letter from **George L. Barnett** informs us that he is presently studying at New York University Law School, on a Pomeroy Scholarship, and is presently on the law review. George is planning on spending the summer in Los Angeles. A regional meeting of Sigma Epsilon Chi should get his summer off to a good start. . . . Keep us posted on summer plans and let's greet Bob back to the states with a full mailbox of class news.—**Alan V. Oppenheim**, 1200 Commonwealth Avenue, Allston, Mass.

'61

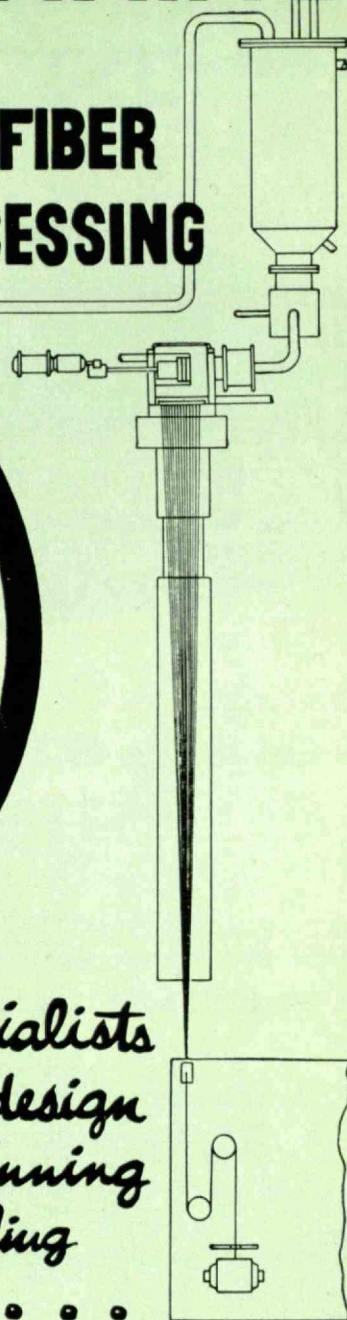
Lots of news to report, so let's get right on with it. At long last some personal notes and letters are beginning to come in from various members of the class. This is great. Keep it up! If these columns are derived, month after month, solely from a stack of newspaper clippings, they cannot fail to lack something. Last month we heard from **Pete Crichton**, **Art Silverman**, and **Chuck Arcand**. . . . This month we have a card from **Dick Mezger**. By the time this is in your hands, he will be back from a month's vacation in Europe, including travel through Germany, England, France, Belgium, and Italy. Dick is working for Uncle Sam, as a civilian, at the U.S. Naval Ordnance Laboratory; his address is 110 Rosewood Avenue, Baltimore, Md. . . . A letter arrived from Athens, Greece, to bring us up to date on the whereabouts and activities of **John Tsahageas**. Rather than play editor, I'll pass it on directly. John writes: "Last June I came back to the old country, after five years' stay in the U.S.A., and started working for Doxiadis Associates, a Greek firm engaged in architecture and ekistics development (city planning in its broadest meaning) in many countries. Then in October I was granted a full time scholarship towards a Ph.D. in ekistics at the Graduate School of Ekistics in Athens, which is unique in the sense that it was established by a consulting firm,

Doxiadis Association, for the promotion of knowledge in this field through class training, study, research, and practice at the nearby office of Doxiadis Associates." John's address, by the way, is 32 Ferron Street, Athens, Greece.

Word from our brethren under arms; the Army has been prodigal in its distribution of press releases lately. Both **Pete Bankson** and **Richard de Neufville** have completed the airborne course at the Infantry School, Fort Benning, Ga. Among other things, this included five parachute jumps from an altitude of 1,250 feet. Prior to this, Pete had completed the ranger course at the Infantry School; this includes, I am informed, training in demolitions, communications, fieldcraft, survival, hand-to-hand combat, patrolling techniques and mountain, jungle, swamp and waterborne operations. A 17-mile forced march with full field equipment was also part of the curriculum. After all that, the parachute jumps must have been easy. Completing the officer orientation course at the Chemical Corps School at Fort McClellan, Ala., last December were **Nelson E. Stefany** (of whom more later) and **Mitchell B. Brodtkin**. Stationed in Furth, Germany, is **Walter B. Cheever**, with the 261st Engineer Company. **John B. Sabel, 2d**, has been assigned to the Second Logistics Command's Headquarters Company at Fort Lee, Va., after duty at Aberdeen Proving Ground in Maryland. Prior to entering the Army he was with Sikorsky Aircraft in Stratford, Conn. Finally, **Robert H. Badgely, Jr.** has completed the officer orientation course at the Air Defense School, Fort Bliss, Texas; and **John P. Shea, Jr.**, a similar course at the Southeastern Signal School at Fort Gordon, Ga. Before starting his service he was employed by Reflectone Electronics of Stamford, Conn. Congratulations are certainly in order for all these men. . . . Further word on **Nelson Stefany**: his engagement to Miss Sandra Louise Conzen, of Bayport, N.Y., was announced last February. A June wedding is planned. He is apparently stationed in Arkansas, at the Pine Bluff Arsenal.

One of eight finalist groups in a contest to design a new City Hall for Boston was a four-man team from Waterman, Page and Associates, Inc., of which all but one were M.I.T. architects from our class. They are **Ernst V. Johnson**, **John P. Ruffing**, and **Robert Hsiung**. . . . In closing, a word from your secretary. Be it known that the class now possesses a complete listing of all its members, with addresses. When I say complete, I mean complete; it lists graduates students who graduated with us, and a lot of people who for one reason or another didn't graduate at all, as well as S.B. men. The address turn-over is pretty heavy, but I've kept ahead of it so far. The listing is thus pretty well up-to-date. If I can help any of you to locate someone, or perform some similar service, I will be happy to do so. . . . If this reaches you in time, don't forget the Cocktail Party for the class on Saturday, May 5, at 4 P.M. at the Faculty Club in the Sloan Building.—**Joseph Harrington 3d**, Secretary, M.I.T. Graduate House 212A, 305 Memorial Drive, Cambridge 39, Mass.

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